



*U.S. Department of Energy*

*National Energy Technology Laboratory*



MARCH 15, 2000

To: ALL PROSPECTIVE APPLICANTS

FINANCIAL ASSISTANCE SOLICITATION, NUMBER DE-PS26-00NT40769

TESTING AND EVALUATION OF PROMISING MERCURY CONTROL TECHNOLOGIES  
FOR COAL BASED POWER SYSTEMS

The Department of Energy (DOE) is conducting a solicitation to competitively seek cost-shared research and development applications to provide a better understanding of mercury control for coal-based power generating activities while determining realistic process/equipment costs for various levels of mercury removal. Through this solicitation, DOE expects to support applications in the following areas of interest: (1) Field Testing of Sorbents Upstream of Existing Utility Particulate Control Devices, (2) Field Testing of Effective Mercury Control Technologies Upstream of and Across Flue Gas Desulfurization Systems, (3) An Integrated Approach for Overall Control of Mercury, and (4) Testing Novel and Less Mature Control Technologies on Actual Flue Gas at the Pilot-scale.

Any resultant awards are expected to be Cooperative Agreement instruments and will require cost sharing. Specific aspects related to (1) Areas of Interest, (2) application evaluation, (3) application preparation instructions, (4) projected funding (including cost-sharing requirements), and (5) the timing sequence for application submissions, review, selection, and award of financial assistance instruments, can be found in the solicitation.

The purpose of this Internet posting is to provide easy access to the final solicitation. If you would like to ask a question, seek clarification, or offer a comment, please respond directly by e-mail or fax to the DOE point of contact. Your response should include your name, affiliation, telephone number, e-mail address, as well as your specific comments and/or questions.

The solicitation will be available only through the National Energy Technology Laboratory's or NETL's World Wide Web Server Internet System at <http://www.netl.doe.gov/business/solicit>. The final solicitation has two (2) distinct closing dates for specific topic areas of interest. As currently structured, applications under Topics 1,2, and 3 are due on April 28, 2000; and applications under Topic 4 are due August 31, 2000. Applications under Topics 1,2, and 3 will be evaluated and selections made on or before June 30, 2000, with awards made approximately ninety (90) days later; and applications under Topic 4 will be evaluated and selections made on or before October 31, 2000, with awards made approximately ninety (90) days later. Prospective applicants should check the webpage identified herein at regular intervals for updates since any additional changes or amendments to the final solicitation will be posted only on the webpage.

The DOE point of contact for this solicitation is:

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Thanks for your interest in Fossil Energy's programs. We look forward to hearing from you.

Sincerely,

Richard D. Rogus  
Contracting Officer  
Acquisition and Assistance Division

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# TESTING AND EVALUATION OF PROMISING MERCURY CONTROL TECHNOLOGIES FOR COAL BASED POWER SYSTEMS

## SECTION I INTRODUCTION

### I.1 DEPARTMENTAL OBJECTIVE

DOE's mission for mercury measurement and control is to perform research and development activities to provide a better understanding of mercury and its speciation for coal-based power generation which eventually allows for more efficient, cheaper control technology options. DOE has conducted research and development activities aimed at mercury removal by enhancing conventional pollution control technologies, identifying combustion modifications, and developing advanced control methods.

The primary objectives of this solicitation are (1) to collect cost and performance data produced from field testing of promising mercury control technologies at incremental levels of mercury removal up to the maximum removal (total i.e., elemental plus oxidized) possible; and (2) to further develop less mature methods for control of mercury emissions from coal-fired power plants. A secondary focus of this solicitation is to measure and/or assess potential multiple pollutant or co-control of pollutants associated with the control technology field test and development projects designed to qualify mercury emission reductions. Multiple financial assistance awards, Cooperative Agreements, will be awarded in the following topic areas of interest to develop a possible suite of mercury control options for the utility industry:

TOPIC 1: FIELD TESTING OF SORBENTS UPSTREAM OF EXISTING UTILITY PARTICULATE CONTROL DEVICES

TOPIC 2: FIELD TESTING OF EFFECTIVE MERCURY CONTROL TECHNOLOGIES UPSTREAM OF AND ACROSS FLUE GAS DESULFURIZATION SYSTEMS

TOPIC 3: INTEGRATED APPROACH FOR OVERALL CONTROL OF MERCURY

TOPIC 4: TESTING NOVEL AND LESS MATURE CONTROL TECHNOLOGIES ON ACTUAL FLUE GAS AT THE PILOT-SCALE

The Department of Energy's intent under this solicitation is to gather cost and performance data based on field tests of promising mercury control technologies on a variety of coal types to determine the following:

- 1) mercury removal by promising control technologies in large scale tests at three incremental levels above the baseline up to the maximum removal possible;
- 2) the applicability of mercury control technologies to multiple power plant configurations including electrostatic precipitators, baghouses, fabric filters, etc;
- 3) the possible negative and positive impacts to the overall operation of the power plant (including impacts on by-product sales, waste disposal);
- 4) accurate capital and operational cost(s) at different mercury removal levels over a specified performance period;
- 5) the greatest amount of mercury removed at the least total cost per pound of mercury removed; and
- 6) effective sequestration of the captured mercury in various by-products and waste material.

Under these Cooperative Agreements and subject to the availability of funds, DOE expects to provide from \$8 to \$10 million for projects under Topics 1,2, and 3; and from \$2 to \$3 million for projects under Topic 4. The period of performance for all projects selected under Topics 1,2 or 3 is expected to be up to three years, with projects associated with Topics 1,2 and 3 being initiated at different times over the three year period (See Section II, Item II.34). This is primarily dependent on the number of awards. Not all awards selected for field testing under Topics 1, 2 and 3 will be conducted within the same year due to availability of funds. Projects under Topic 4 would start approximately at the same time and have a three (3) year period of performance.

ALL sampling will be conducted by the Offeror or the Offeror's subcontractor and as such, the proposers should identify their sampling capabilities and analytical requirements as well as provide cost data support for their submission in each topic area proposed.

DOE, or its contractor/representative, reserves the option to conduct performance testing and verification of the mercury removal capability of the proposed technology.

DOE, or its representative, also reserves the option of providing an independent, third party contractor (in cooperation with the Environmental Protection Agency) to conduct additional mercury removal measurements during parametric testing, in conjunction with the proposer's mercury measurement plan. The DOE supplied contractor may also measure levels of other flue gas constituents, including but not limited to SO<sub>3</sub>, CO<sub>2</sub>, NO<sub>x</sub>, and HCl.

## I.2 BACKGROUND

Based on the available evidence of health effects, The U.S. Environmental Protection Agency (EPA) has been evaluating the need to regulate mercury releases to the environment. In response to the Congressional mandates in the Clean Air Act Amendments of 1990, EPA issued the Mercury Study Report and the Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units Report. In spite of the enormous effort represented by these reports, as well as the efforts of DOE, EPRI, and others, in conducting the field measurement programs which aided in forming the basis for these reports, a definitive answer on the need for mercury regulation has not been found.

A number of issues remain pertaining to mercury discharges and their effect on the environment. These issues can generally be grouped into four main categories: emissions inventory; control technology; fate of releases; and health effects. The emissions inventory will be further defined through two new data-collection initiatives by the EPA: the Toxic Release Inventory (TRI) and the Information Collection Request (ICR). The fate of releases and health effects are being investigated through many efforts funded at both state and federal government levels.

Mercury emissions from coal-fired power plants have been extensively evaluated for nearly ten years to aid in determining possible regulation by EPA. EPA is scheduled to determine whether it is appropriate and necessary to regulate toxic air pollutant emissions (focusing on mercury) from coal-fired utility boilers by December 15, 2000. If it is determined that regulations are necessary, a proposed regulation will be due no later than December 15, 2003 and promulgated no later than December 15, 2004. Utility industry regulatory compliance must be in place by December 2007 since the Clean Air Act requires that sources come into compliance with Maximum Achievable Control Technology (MACT) three years after promulgation of the regulations. Any contemplated regulation will be directly dependent on the availability of cost-effective control technologies capable of implementation in a very diverse coal-fired utility industry.

EPA has indicated 51.6 tons of mercury are emitted annually as a result of coal utilization in the utility industry. To obtain a better inventory of the mercury input and emissions from the utility industry, EPA required the Information Collection Request or ICR. The ICR requires mercury concentration determinations in the various coals utilized in the utility industry and for mercury flue gas speciation measurements, representing a cross section of the coal-fired utility industry. Not only will the amount of mercury entering the boilers be determined, but the forms of mercury and their fate will be determined for the air pollution control devices (APCDs) utilized for other pollutants in the various flue gas streams of coal-based power systems.

Table 1, indicates the removal of elemental and the oxidized forms of mercury across the various APCDs utilized by the utility industry, and the removal associated with coal preparation. Existing flue gas emission controls are capable of reducing the potential amount of mercury released to the atmosphere by more than 50%. These controls, however, vary considerably on a plant-by-plant and boiler-by-boiler basis and can range from essentially no control to as high as 90%.

TABLE 1

Power Plant Operations Strategy	Oxidized Mercury (Hg <sup>+,++</sup> )		Elemental Mercury (Hg <sup>0</sup> )	
	Range	Mean	Range	Mean
Coal Cleaning	-	-	<b>10-50</b>	<b>37</b>
ESP	<b>0-30</b>	<b>15</b>	<b>0-60*</b>	<b>15/30*</b>
Fabric Filter	<b>10-50</b>	<b>30</b>	<b>10-90*</b>	<b>65*</b>
Scrubber	<b>20<sup>1</sup>-90<sup>2</sup></b>	<b>55<sup>2</sup></b>	-	-
Spray dryer	<b>10-90</b>	<b>60</b>	<b>10-90</b>	<b>60</b>
Carbon Adsorption <sup>3</sup>	Decrease		Decrease	

\* Removals are for plants firing Powder River Basin (PRB) coals, other sub-bituminous coals, and western bituminous coals

<sup>1</sup> Lower end values are for wet flue gas desulfurization scrubbers on power plants firing either sub-bituminous or lignite coals and are due to lowered oxidized mercury concentrations and high amounts of flue gas being bypassed

<sup>2</sup> Wet flue gas desulfurization scrubbers on power plants firing high-sulfur bituminous coals

<sup>3</sup> Pilot-scale investigations on actual flue gas from coal combustion

Considerable effort has gone into developing possible efficient, low-cost technologies for mercury emission reductions from utility plants. The DOE goal is to develop control technology options for reducing the current annual utility mercury emissions by 50 to 70% by 2005 and by 90% by 2010 at a cost between one-quarter to one-half of the current cost estimates.

Further details on this subject can be obtained from the following reference: Brown, T.D., Smith, D.N., Hargis, R.A., and O'Dowd, W.J., "Mercury Measurement and Its Control; What We Know, Have Learned, and Need to Further Investigate,". The referenced document is available through the NETL's World Wide Web Server Internet System at <http://www.netl.doe.gov/business/solicit>, along with the solicitation.

### I.3 DEPARTMENT OF ENERGY'S INTENT

The goals of this solicitation are to collect cost and performance data with parametric and long term field experiments at power plants with existing air pollution control devices (APCDs) utilized to control other pollutants as well as mercury. Further, novel technologies are sought that either augment existing APCDs, or are stand-alone methods that could be more cost effective than other processes.

This solicitation builds on past DOE and other R&D organizations' mercury measurement and control achievements in an effort to provide the cheapest control options for the utility industry in mid-term application (5 to 10 years).



## **I.4 TECHNICAL TOPIC AREAS**

DOE has identified technologies that are expected to be important in developing possible strategies on mercury control for the coal-fired electric utility industry. Topics 1 and 2 are those for which testing at the larger scale should provide important data and information to aid in determining the applicability to the utility industry of enhancing existing APCDs. Topic 3 encompasses a combination of two or more distinct methodologies for mercury removal. DOE expects that an integrated application would result in a reduction in proposed cost relative to the combined costs of two or more separate applications addressing the same activities while also removing the same or higher percentage of mercury (as that required in Topics 1 and/or 2). Topic 4 is directed at developing other innovative concepts for control of mercury from coal-fired utility boiler systems. These applications may vary over a range of maturity on the technological development scale. The measurement and assessment of multi pollutant or co-control (i.e., Toxic Release Inventory (TRI) substances and criteria pollutants) associated with any mercury reduction technologies being tested shall also be considered under the solicitation.

For Topics 1,2, and 3, the proposer must indicate the baseline removal of total mercury with the existing air pollution control device before injection, system modification, or installation, and then propose parametric testing at three incremental removal levels (from 40% to 90%) of the remaining mercury such that minimum total removals (as specified under each subtopic) are accomplished. DOE is also interested in determining the cost for the maximum total mercury removal possible with each system, sorbent, etc. proposed. If the applicant proposes a sorbent for mercury removal under Topics 1, 2, or 3, the applicant should adequately address why they believe their sorbent is best (through the use of experimental data) and document the cost and availability at scales commensurate with the desired testing objectives. DOE expects that an appropriate performance period for Topics 1-3 would consist of five consecutive days of operating at each incremental mercury removal level (identified by the proposer) and once parametric testing is completed and the maximum mercury removal is determined, the applicant should verify their highest mercury removal level with fourteen consecutive days of testing/measurement.

The performance targets for each of the topics are presented below.

### **TOPIC 1: FIELD TESTING OF SORBENTS UPSTREAM OF EXISTING UTILITY PARTICULATE CONTROL DEVICES**

Topic 1 has four (4) distinct subtopics addressing sorbent injection associated with existing or new proposed particulate control devices utilized in coal-fired utility boiler systems. The proposer must indicate the attributes of the selected sorbent.

#### **SUBTOPIC 1.1: Total Mercury Removal Associated with Electrostatic Precipitators (ESPs)**

Applications under this subtopic must address the following performance targets:

- Total mercury (elemental and the oxidized form) removal associated with sorbent injection upstream and across all existing ESP configurations is set at between seventy (70) and ninety (90) percent which includes the mercury that is collected with the native fly ash.

-- To reduce field testing costs associated with this subtopic, it is required that the testing be conducted on ESPs treating the flue gas equivalent to that from coal-fired boiler systems between 50 megawatts electrical (MWe) and 150 MWe. For example, a 500 MWe coal-fired unit with four (4) separate flue gas streams providing flue gas to four (4) separate ESPs will qualify, but only one flue gas stream and associated ESP would be tested using an amount of flue gas approximating that from a 125 MWe coal-fired unit.

#### **SUBTOPIC 1.2: Total Mercury Removal Associated with Fabric Filters (FFs)**

Applications under this subtopic must address the following performance targets:

-- Total mercury (elemental and the oxidized form) removal associated with sorbent injection upstream of and across any existing fabric filter configuration (reverse-gas, shake-deflate, pulse-jet) used as the primary particulate control device is set between seventy (70) and ninety (90) percent, which includes the mercury that is collected with the native fly ash.

-- To reduce field testing costs associated with this subtopic, it is required that testing be conducted on up to three (3) of the total compartments of the fabric filter or baghouse system treating the quantity of flue gas equivalent to that from a coal-fired boiler system between 20 and 150 MWe.

#### **SUBTOPIC 1.3: Total Mercury Removal Associated with an ESP Polishing Device**

Applications under this subtopic must address the following performance targets:

--Total mercury (elemental and the oxidized form) removal associated with sorbent injection upstream of and across any existing fabric filter (FF) configuration (e.g., high air-to-cloth pulse-jet) currently being utilized as a polishing device for an existing under-performing ESP, is set between seventy (70) and ninety (90) percent, which includes the mercury that is collected with the native fly ash.

--To reduce field testing costs under this subtopic, it is required that testing be conducted on up to three (3) of the total compartments of the fabric filter or baghouse system.

#### **SUBTOPIC 1.4: Total Mercury Removal Associated with a Device Enhancing Existing Air Pollution Control Device Performance**

Applications under this subtopic must address the following performance targets:

-- Total mercury (elemental and the oxidized form) removal associated with sorbent injection upstream of and across additional existing air pollution control configurations (cyclones, circulating fluidized bed contactors, or any other existing air pollution control device technology) is set between seventy (70) and ninety (90) percent, which includes the mercury that is collected with the native fly ash.

-- To reduce field testing costs, a maximum of two compartments or modular sections of the air pollution control configuration would be tested. It is also recommended that the configuration, if modular, treat only the quantity of flue gas comparable to that from units between 25 MWe and 200 MWe.

## **TOPIC 2: FIELD TESTING OF EFFECTIVE MERCURY CONTROL TECHNOLOGIES UPSTREAM OF AND ACROSS FLUE GAS DESULFURIZATION SYSTEMS**

Applications under this subtopic must address the following performance targets:

- Mercury (elemental and the oxidized form) removal accomplished with flue gas desulfurization (FGD) systems or configurations utilized for sulfur dioxide (SO<sub>2</sub>) removal is set at ninety (90) percent total.
- To further reduce field costs associated with this solicitation and particular topic, it is required that the only one absorber module, of a multi-absorber system, be tested.

## **TOPIC 3: INTEGRATED APPROACH FOR OVERALL CONTROL OF MERCURY**

An integrated approach in combination with approaches contained in Topic 1 and 2 or any combination of two or more different methodologies to facilitate mercury removal from flue gas can be submitted. An example could be a combustion modification and sorbent injection. DOE expects that an integrated application would result in a reduction in proposed cost relative to the combined costs of two or more separate applications addressing the same activities. (See Section IV.5). Additionally, these techniques would only be acceptable if they have the same or higher percentages of mercury removal using the highest separate performance targets identified in Topics 1 and/or 2. For example, in the case of sorbent injection with FGD enhancement, the integrated system must meet the total mercury removal performance specification of ninety percent for FGD, which is higher than that of injected sorbent.

Applications under this subtopic must address all applicable performance specifications under Topics 1 and 2

## **TOPIC 4: TESTING NOVEL AND LESS MATURE CONTROL TECHNOLOGIES ON ACTUAL FLUE GAS AT THE PILOT-SCALE**

DOE expects that any technology proposed under this topic area would have already been tested on the laboratory-scale. Testing should be on actual flue gas.

The novel technologies include, but are not limited to:

- innovative sorbents for mercury removal (elemental plus oxidized)
- techniques augmenting mercury removal (elemental plus oxidized) with the native fly ash

- techniques to augment mercury removal (elemental plus oxidized) across FGD systems
- techniques augmenting mercury removal (elemental plus oxidized) by other APCDs designed to control SO<sub>2</sub>, nitrogen oxides (NO<sub>x</sub> and NO<sub>2</sub>), other acid gases, and Toxic Release Inventory (TRI) substances, (dry FGD systems, low NO<sub>x</sub> burner systems, SCR and SNCR, etc.)
- techniques that could also achieve multiple pollutant or co-control of SO<sub>2</sub>, nitrogen oxides (NO<sub>x</sub> and NO<sub>2</sub>), other acid gases, and TRI substances with the focus being on mercury (elemental plus oxidized) removal.

Applications under this subtopic must address the following performance targets:

--Ninety (90) percent total mercury removal (elemental plus oxidized) without negatively impacting any coal combustion by-products or waste disposal. .

--The cost of any novel sorbent must have the capability of being at least forty (40) percent less than the current costs of commercial virgin activated carbons. (DOE believes a reasonable cost for a non-regenerable, virgin activated carbon (based on prior tests) is about 50 to 55 cents per pound). The cost of mercury removal for a regenerable sorbent must be competitive (and demonstrated in the proposal) with non-regenerable sorbents. A reasonable justification for the future commercial cost of the novel sorbent must be shown. The sorbent must not negatively impact the sale of fly ash or the ecosystems where the fly ash is disposed.

--Techniques to augment mercury removal across FGD systems must allow the system to achieve additional mercury (primarily elemental) removal of at least seventy-five (75) percent over baseline mercury removal. The additives or media utilized shall not negatively impact the by-products of FGD systems or the ecosystems where the FGD waste is disposed.

## SECTION II

### CONDITIONS AND NOTICES

#### **II.1 Award Instrument**

It is anticipated that multiple financial assistance awards, specifically Cooperative Agreements, will result from this solicitation. Awards are expected to be made in the four (4) topics of interest described in Section I, Introduction of this draft solicitation.

#### **II.2 Cost Sharing**

The minimum cost share has been set at thirty-three (33) percent for Topics 1,2, and 3. The minimum cost share for Topic 4 is twenty (20) percent. The cost share may include otherwise allowable costs as in-kind contributions. Unallowable costs include:

- Costs incurred in negotiating a commitment of a host utility are not allowable as direct charges to the project.
- Costs incurred in negotiating the commitment of all parties for the teaming arrangement of the proposed team are not allowable as direct charges to the project.
- Costs incurred in negotiating a Cooperative Agreement with DOE are not allowable as direct charges to the project.
- DOE shall not accept valuation for property sold, transferred, exchanged, or manipulated in any way to acquire a new basis for depreciation purposes or to establish a fair use value in circumstances that would amount to a transaction for the purpose of the Cooperative Agreement.
- DOE will not share in both the direct cost and depreciation on the same item. Depreciation is not allowable for cost sharing on any item previously charged to the project as a direct cost.
- Interest on borrowing (however represented) and other financial costs such as bond discounts, cost of financing and refinancing capital (net worth plus long-term liabilities), are unallowable project costs. This includes interest on funds borrowed for construction.
- Facilities capital cost of money shall be an unallowable cost on all real property or equipment acquired by or on behalf of the Participant in connection with the performance of the project.
- Previously expended research, development, or exploration costs are unallowable.
- Forgone fees, forgone profits, or forgone revenues are unallowable.

- Fee or profit paid to any member of the proposing team having a substantial interest in the project is unallowable. Competitive subcontracts placed with the prior written consent of the Contracting Officer and subcontracts for routine supplies and services are not covered by this prohibition.
- The value of patents and data contributed to the project is unallowable.
- Allowable costs under past, present, or future Federal Government contracts, grants or Cooperative Agreements may not be charged against this Cooperative Agreement. Likewise, the Participant may not charge costs allowable under this project, including any portion of its cost share to the Federal Government under any other contracts, grants, or Cooperative Agreements.
- Business losses are unallowable.

### **II.2.1 Host Site Agreements**

The Offeror must have a letter of commitment from each host utility providing evidence of the host sites willingness to permit the Offeror to conduct tests on its site for the duration of the project. Those Offerors selected for negotiation of award shall submit finalized host site agreements to DOE thirty (30) days prior to award.

The Offeror shall make all provisions in the Host Site Agreement for the access of personnel from DOE and the National Energy Technology Laboratory (NETL) for all projects under Topics 1, 2,3, and 4. Access shall be for the duration of the project at each host site.

The Offeror shall also make all provisions in the Host Site Agreement for the possible access of personnel from the Environmental Protection Agency (EPA), and/or their respective sampling and quality assurance/quality control (QA/QC) contractors during performance testing if DOE so desires. The EPA may choose to participate in performance testing under Topics 1,2, and 3 and would also need access to the host sites and/or pilot-scale facilities for participation in the projects selected under Topic 4. This participation could include, but not be limited to, the evaluation of the mercury/multipollutant control technology performance by providing emission data measurement, monitoring, and QA/QC support for various selected projects being field tested at the larger scale, and for observing the testing of projects under Topic 4. EPA would only need access during specified periods of time and wouldn't be on site without prior DOE notification to the host site.

### **II.3 Model Cooperative Agreement**

Cooperative Agreements awarded under this solicitation will be in the format of the Model Instrument included in this solicitation as Attachment A.

## **II.4 Application Preparation Costs**

Applications submitted in response to this offering are an expression of interest only and do not obligate DOE to pay for the preparation or submission of an application.

## **II.5 Commitment of Public Funds**

The Contracting Officer is the only individual who can legally commit the Government to the expenditure of public funds in connection with the proposed Cooperative Agreement. Any other commitment, either explicit or implied, is invalid.

## **II.6 Availability of Funds**

Subject to the availability of funds in the technical areas proposed, DOE expects to provide \$1 to \$4 million in each of the three (3) years FY01, FY02, and FY03 for awards under this solicitation.

## **II.7 Number of Awards**

The exact number of awards is unknown but multiple awards in each of the four (4) program topic areas of interest may be made. The Government reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in the response to this solicitation, and will award that number of financial assistance instruments that serve the public purpose and are in the best interest of the Government.

## **II.8 Pre-Application Conference**

A pre-application conference is not planned.

## **II.9 False Statements**

Applications must set forth full, accurate and complete information as required by this solicitation (including attachments). The penalty for making false statements in such documents is prescribed in 18 U.S.C. 1001.

## **II.10 Reporting Requirements**

The recipient shall prepare all plans and reports specified in the Federal Assistance Reporting Checklist included in the Model Cooperative Agreement included in this solicitation as Attachment A.

## II.11

### **DOE Issuing Office**

U. S. Department of Energy  
National Energy Technology Laboratory  
Wallace Road  
P. O. Box 10940, MS 921-143  
Pittsburgh PA 15236-0940

**Point of Contact:** Contracting Officer: Martin J. Byrnes  
Telephone:(412) 386-4486  
e-mail address: byrnes@netl.doe.gov

E-mail is strongly encouraged for the submission of questions.

## II.12

### **Amendment of the Solicitation**

The only method by which any term of this solicitation may be amended is by an express, formal amendment to the solicitation generated by the issuing office. No other communication, whether oral or in writing, will amend or supersede the terms of this solicitation.

## II.13

### **Catalog of Federal Domestic Assistance Number**

CFDA Number 81.089 applies.

## II.14

### **Applicant Eligibility**

Eligibility for participation in this Program Solicitation is considered to be full and open and all interested parties may apply.

Applications submitted by, or substantially relying upon the technical expertise of, FFRDCs and DOE M&O contractors are not desired, will not be evaluated, and will not be eligible for an award under this solicitation. Applicants are encouraged to maximize the use of private sector organizations in the performance of the proposed effort. However, an application that includes performance by an FFRDC or DOE M&O contractor(s) as a subcontractor will be evaluated and may be considered for award, provided that (1) the proposed use of any such entities is specifically authorized by the cognizant agency for the FFRDC or DOE for DOE M&O contractors, in accordance with the procedures established for the FFRDC or the M&O contractor; (2) the work is not otherwise available from the private sector; and (3) **the estimated cost of the FFRDC or M&O contractor work does not exceed twenty-five (25) percent of the total estimated project cost. DOE reserves the right to fund the work through a DOE field work proposal or an interagency agreement.**

In addition to the application information to be provided by the applicant as set forth in Section III, the following requirements apply:



1. Justification. The applicant shall submit a letter with its application which states that to the best of its knowledge, the work requested will not place the FFRDC or the DOE M&O contractor in direct competition with the domestic private sector, and that the proposed scope of work cannot be performed by any private entity.
2. Work Scope. The applicant shall submit a detailed scope of work which clearly identifies that portion of the proposed effort for which the expertise and ability to perform lie solely with the DOE M&O contractor. This detailed scope of work shall be provided as an appendix to the Technical Application.
3. Cost Information. The applicant shall provide cost information for that portion of the proposed work scope (see 2, above) to be performed by the DOE M&O contractor. The cost information shall be furnished in the same format and level of detail as prescribed for subcontractors. The estimated cost of the effort shall be clearly identified in the Cost Information.

## **II.15 Time, Date and Place Applications Are Due**

Applications must be received at the following address:

U.S. Department of Energy  
National Energy Technology Laboratory  
Attn: Martin J. Byrnes  
Wallace Road  
P. O. Box 10940, MS 921-143  
Pittsburgh PA 15236-0940

ALL APPLICATIONS UNDER TOPICS 1, 2, AND 3 MUST BE RECEIVED BY 2:00 P.M., LOCAL TIME, ON APRIL 28, 2000 FOR EVALUATION; AND ALL APPLICATIONS UNDER TOPIC 4 MUST BE RECEIVED BY 2:00 P.M., LOCAL TIME, AUGUST 31, 2000 FOR EVALUATION.

Applications under Topics 1,2, and 3 that are not received by 2:00 p.m., local time, on April 28, 2000, will be not be evaluated; and applications under Topic 4 that are not received by 2:00 p.m., local time, on August 31, 2000, will be not be evaluated.

## **II.16 Application Delivery Information**

The outside of the package containing the application should clearly indicate the Solicitation Number and the number of the Program Area of Interest against which the application is being submitted. Copy No. 1 of Volumes I and II should contain the signed original of all documents requiring signature by the applicant. Use of reproductions of signed originals is authorized in all other copies of the application (See Section III.2).

## **II.17           Telegraphic and E-Mail Applications**

Telegraphic applications will **NOT** be considered, although applications may be amended by telegraphic notice provided such notice is received prior to the date and time specified for receipt. The term “Telegraphic” includes both mailgrams and facsimile submissions. Applications submitted by e-mail or other electronic means will **NOT** be considered.

## **II.18           Late Applications, Amendments of Applications and Withdrawals of Applications**

1. An application or amendment of an application shall be timely if it is received at the location on or before the applicable evaluation cycle deadline date and time specified in Paragraph II.15 of this section.
2. Applications or amendments of applications may be withdrawn by written notice at any time before award. Written notice includes e-mails and facsimiles. An authorized representative may withdraw applications in person, if the representative's identity is made known and the representative signs a receipt for the application before award.

## **II.19           Fee and Profit**

Fee or profit will not be paid to the recipients of financial assistance awards resulting from this solicitation.

## **II.20           Small and Small Disadvantage Business**

DOE strongly encourages small and small disadvantaged business participation in its programs and in this solicitation. It is DOE policy to give these business concerns a reasonable opportunity to participate fairly and equitably.

## **II.21           Responsible Applicants**

The standards for responsible applicants set forth at 10 CFR 600.30 apply. DOE reserves the right to make a pre-award review of the applicant’s ability to manage and account for a DOE Cooperative Agreement if awarded, or to determine compliance with generally applicable requirements.

## **II.22           Treatment of Proprietary Information**

Applications submitted in response to this solicitation may include technical data and other data, including trade secrets and/or privileged or confidential commercial or financial information, which the applicant does not want disclosed to the public or used by the Government for any purpose other than application evaluation. To protect such data, the applicant shall specifically identify each page including each line or paragraph thereof containing the data to be protected and insert a page following the cover letter of the application (SF-424) with the following notice:

## **NOTICE**

The data contained on page(s) \_\_\_\_\_ of this application have been submitted in confidence and contain trade secrets and/or privileged or confidential commercial or financial information, and such data shall be used or disclosed only for evaluation purposes, provided that if a Cooperative Agreement is made as a result of or in connection with the submission of this application, the Government shall have the right to use or disclose the data herein to the extent provided in the Cooperative Agreement. This restriction does not limit the Government's right to use or disclose data that it obtains without restriction from any source, including the application.

### **II.23 Unnecessarily Elaborate Applications**

Unnecessarily elaborate brochures or other presentations beyond those sufficient to present a complete and effective response to this solicitation are not desired and may be construed as an indication of the applicant's lack of cost consciousness. Elaborate art work, expensive paper and bindings, and expensive visual and other presentation aids are neither necessary nor wanted.

### **II.24 Evaluation Personnel**

Applications will be evaluated in accordance with the criteria set forth in Section IV of the solicitation. It is expected that all applications submitted under this solicitation will be evaluated by Federal personnel only. However, the Government reserves the right to utilize non-Federal evaluators in the event a situation would require such expertise. Any review performed by non-Federal evaluator(s) will require the prior consent of the applicant. Applicants are further advised that DOE may be unable to consider an application from an offeror that withholds such consent.

### **II.25 DOE Treatment of Application Information**

When using personnel from other Federal agencies, DOE contractors, or other consultants to assist DOE in the evaluation of applications, DOE will obtain assurances from all evaluators that proprietary information contained in an application will be kept confidential.

### **II.26 Application Clarification**

DOE reserves the right to require applications to be clarified or supplemented to the extent considered necessary either through additional written submissions or oral presentations.

## **II.27 Award Without Discussions**

Notice is given that award may be made after few or no exchanges, discussions or negotiations. Therefore, all applications should be submitted initially on the most favorable technical, cost and other terms to the Government that the applicant can submit.

## **II.28 Government Right to Reject or Negotiate**

The Government reserves the right, without qualification, to reject any or all applications received in response to this solicitation and to select any application, in whole or in part, as a basis for negotiation and or award.

## **II.29 Anticipated Selection Dates**

The following reflects the anticipated selection dates by evaluation of topic areas. Cooperative Agreements are expected to be awarded within 90 calendar days following the selection.

<u>Evaluation by Topic Areas</u>	<u>Anticipated Selection Date</u>
Topics 1,2, and 3	June 30, 2000
Topic 4	October 31, 2000

## **II.30 Information of Award**

Written notice to unsuccessful applicants and Cooperative Agreement award information will be promptly released in accordance with DOE regulations applicable to financial assistance awards.

## **II.31 Effective Period of Application**

All applications are required to remain in effect for at least 180 calendar days from the due date to which the applications are responsive.

## **II.32 Disposition of Applications**

Applications will not be returned except for timely withdrawals or as otherwise specified in this section.

## **II.33 Executive Order 12372**

Applications submitted in response to this solicitation are not covered by Executive Order 12372--Intergovernmental Review of Federal Programs.

**II.34****Period of Performance**

For projects in Topic Areas 1-3, it is anticipated that the duration of activities will be conducted up to three years starting from September 2000 through September 2003. The awards under Topics 1, 2, and 3 would be staggered over the three year period of performance. DOE shall determine the number of awards and their respective start dates for the field testing over the three year period of performance. For Topic 4, it is anticipated that the duration of activities would be similar. The start dates are contingent on the scheduling owing to power plant outages, amount of construction required, availability of DOE funding, etc. Not all awards selected for field testing will be conducted within the same year.

**II.35****Simpson-Craig Amendment**

Organizations that are described in Section 501(c)(4) of the Internal Revenue Code of 1986 and engage in lobbying activities after December 31, 1995, shall not be eligible for the receipt of Federal funds constituting an award, grant, or loan. Section 501(c)(4) of the Internal Revenue Code of 1986 covers:

“Civic leagues or organizations not organized for profit but operated exclusively for the promotion of social welfare, or local associations of employees, the membership of which is limited to the employees of a designated person or persons in a particular municipality, and the net earnings of which are devoted exclusively to charitable, educational or recreational purposes.”

Lobbying activities are defined broadly to include, among other things, contacts on behalf of an organization with specified employees of the Executive Branch and Congress with regard to Federal legislative, regulatory and program administrative matters.

Applicants must submit the Simpson-Craig Amendment Representation found in the assurance submission requirements (See Section III, 2.1, B.5).

**II.36****Minority Economic Impact Loan**

No loans are available under the DOE Minority Economic Impact (MEI) loan program.

**II.37****Debriefings**

Each unsuccessful applicant will be offered the opportunity for an explanation or debriefing as to why the application was not selected. A debriefing request should be made within one (1) month following notification of an applicant's selection/rejection for award. Debriefings will be conducted at the earliest feasible time.

DOE encourages teaming of industrial firms with other kinds of organizations. Compared to individual organizations, multidisciplinary teams are often better equipped to identify and address the important issues associated with the development of new technology.

**National Environmental Policy Act Strategy (JULY 1999)**

The National Environmental Policy Act of 1969 (NEPA) establishes a national policy to ensure that consideration is given to environmental values and factors in Federal planning and decision making. The Department of Energy's policy is to comply fully with the letter and spirit of NEPA. To ensure that environmental factors are considered in the decision making process and to promote environmentally responsible decisions, DOE incorporates NEPA requirements early in the planning process for proposed actions. Consistent with Council on Environmental Quality (CEQ) NEPA regulations (40 CFR Parts 1500-1508) and DOE NEPA regulations (10 CFR Part 1021), an overall strategy for compliance with NEPA has been developed. This includes performing project-specific environmental reviews of environmental issues pertinent to each proposed project before projects are selected, followed by site-specific environmental reviews of each project after DOE selection. It is probable that most, if not all, of the projects proposed under this solicitation will not have a significant effect on the environment, and as such, in accordance with DOE NEPA regulations, will be candidates for "categorical exclusions" (CX) and thus will not require the preparation of an environmental assessment or environmental impact statement. A CX is prepared for actions that obviously do not have a significant environmental impact. To qualify for a CX, a project must be an excluded action and meet certain site-specific criteria. These criteria concern adverse effects on flood plains, wetlands, archeological sites, Indian lands, etc. For further information on categorical exclusions, see 10 CFR Part 1021.410.

No action taken by DOE with regard to any application prior to the completion of the site-specific analysis, including project selection or award, shall be a final decision for purposes of compliance with NEPA.

**Pre-selection Project-specific Environmental Questionnaire (Dec 1999)**

For Applications that undergo comprehensive evaluation, DOE will review under 10 CFR 1021.216, project-specific environmental information supplied by the applicant on the Environmental Questionnaire which is submitted as part of Volume I, Business and Financial application. The environmental information provided by the applicant is independently evaluated by DOE and documented in the form of an environmental critique, which may also include supplemental information developed by DOE. Subsequently, DOE prepares a publicly available environmental synopsis to document the consideration given to environmental factors and to record that the relevant environmental consequences of reasonable alternatives have been evaluated in the selection process.

**II.41****Post-selection Environmental Review (Dec 1999)**

Soon after selection, which shall be contingent as specified in 10 CFR 1021.216(i), depending on the information necessary to satisfy NEPA, applicants may be requested to provide additional environmental information which is more detailed than that provided on the Environmental Questionnaire of this solicitation. This detailed site-and project-specific information may be used as the basis for site-specific NEPA documents prepared by DOE for each selected project. Such NEPA documents shall be prepared, considered, and published by DOE in full conformance with the requirements of the CEQ regulation and DOE NEPA regulations. DOE must complete its appropriate NEPA process before a go/no go decision and before a recipient may proceed with detailed design under the award.

**II.42****Post-award Environmental Monitoring (Dec 1999)**

Each resulting award will specify the monitoring and reporting requirements necessary to ensure compliance with applicable environmental regulations, and permits obtained from Federal, state and local government agencies and DOE NEPA regulations.

**II.43****Notice Regarding Eligible/Ineligible Activities**

Eligible activities under this program includes those which describe and promote the understanding of scientific and technical aspect of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information relating to potential, planned or pending legislation.

## **SECTION III -- APPLICATION PREPARATION INSTRUCTIONS**

### **III.1 Application Requirements**

The application shall be prepared as set forth herein to provide a standard basis for evaluation and to ensure that each application will have a uniform format. These instructions are not to be included in your application.

Applications shall be prepared in accordance with this section. To aid in evaluation, applications shall be clearly and concisely written as well as being neat, indexed (cross-indexed as appropriate) and logically assembled. All pages of each part shall be appropriately numbered and identified with the name of the applicant, the date and the solicitation number to the extent practicable.

If it is determined during the initial review that an application should be considered under a different Topic Area of Interest within this solicitation, the Government reserves the right to review the application under that area.

Each application should clearly demonstrate the applicant's capability, knowledge, and experience in regard to the requirements described herein. Failure to respond or follow the instructions regarding the organization and content of the application may result in the application being deemed unacceptable.

Applicants should fully address the requirements of the solicitation and not rely on reviewers' presumed background knowledge. DOE may return an application that does not include all information and documentation required by statute, 10 CFR Part 600, or the solicitation when the nature of the omission precludes review of the application.

During the review of a complete application, DOE may request the submission of additional information if the information is essential to evaluate the application.

### **III.2 Overall Arrangement of Application**

The application shall consist of two physically separate volumes, individually titled as follows: I) Business and Financial Application and II) Technical Application. Technical applications are to be limited to 75 pages. Cover sheets, indexing divider sheets, table of contents, and indexes listing tables, illustrations, or drawings shall not be counted against the 75 page limitation. Pages in excess of the 75 page limit will not be reviewed by DOE. The required number of each application volume and the required packaging and grouping is shown in the following matrix:

<b><u>VOLUME</u></b>	<b><u>TOTAL VOLUMES REQUIRED</u></b>	<b><u>GROUP 1 PACKAGE</u></b>	<b><u>GROUP 2 PACKAGE</u></b>
<b>Volume I Business and Financial Application</b>	<b>7</b>	<b>1 Signed Original</b>	<b>6 copies</b>
<b>Volume II      Technical Application</b>	<b>7</b>	<b>1 Signed Original</b>	<b>6 copies</b>



**The Originals of Volumes I and II must be wrapped as one package; The remaining copies should be wrapped as a separate package. The outside of each package must clearly identify the solicitation number, the program Area of Interest and the volumes in the package.**

### **III.2.1 Volume I-- Business and Financial Application**

#### **A. General**

1. Volume I, Business and Financial Application, consists of the required application coversheet, application forms, Certification of Minimum Cost Sharing Requirement, assurances package, budget pages, environmental questionnaire, other statements of the offeror, exceptions and deviations, and any other business and financial information.
2. The application identified as the original shall contain all of the original signatures of the documents requiring signature by the applicant. Use of reproductions of signed originals is authorized in all other copies of the application.
3. The Applicant shall provide a minimum cost share as described in Section II of this solicitation.
4. The proposed project team [Prime, Subcontractor(s), Vendor(s), Host Utility(ies), etc.] must be identified and the application must contain written documentation that each party will fulfill its respective role.
5. All forms needed for preparation of Volume I are found on the NETL website at: <http://www.netl.doe.gov/business/forms/forms.html> in either WordPerfect or PDF, and are referenced under Section V of the solicitation. Please note that all forms were developed using WordPerfect 6.1 and formatted for printing using an HP LaserJet IIISi printer. Questions on completion of the forms should be addressed to the Contracting Officer.

#### **B. Format and Content**

Volume I, Business and Financial Application, shall include the following documents (in the order listed):

1. Volume I - Business and Financial Application Coversheet

An Application Cover sheet for Volume I shall be prepared that presents the solicitation number; applicant business name, address and point of contact; proposed Area of Interest; and provided with each copy of Volume I (See Exhibit 1, Application Cover Sheet).

2. Application for Federal Assistance -- Standard Form 424
3. The application must provide a letter of commitment from a duly authorized corporate official committing the Offeror to the minimum cost sharing requirement of thirty-three (33) percent (for Topics 1,2 , and 3 that require 33 percent cost sharing); and committing the Offeror to the minimum cost sharing requirement of twenty (20) percent (for Topic 4) as specified in Section II.
4. The proposed project team [Prime, Subcontractor(s), Vendor(s), Host Utility(ies), etc.] must be identified and the application must contain written documentation that each party will fulfill its respective role.
5. Financial Assistance Assurance Package -- Filename: **assure.fa**
  - a. NETL Assurance, Non-Construction Programs -- NETL F 4220.38
  - b. Assurances - Non-Construction Programs -- Standard Form 424B
  - c. Additional Representations and Certifications for Federal Financial Assistance -- NETL F 4220.35
  - d. Disclosure of Lobbying Activities -- Standard Form - LLL
  - e. Assurance of Compliance -- Nondiscrimination in Federally Assisted Programs -- DOE F 1600.5

6. Budget Page

Complete appropriate budget form as indicated below along with all supporting cost data as specified by the instructions. The applicant shall provide a detailed budget, for the entire period of support, with written justification sufficient to allow evaluation of the itemized list of costs provided. Failure to provide the detailed cost information as required will result in an incomplete application.

University Applicants: Budget Page -- DOE F 4620.1

Other Applicants: Federal Assistance Budget Information -- DOE F 4600.4

7. Environmental Questionnaire -- Filename: **nepasol**
8. Economic Benefit to the United States

Applicants must provide a separate discussion, not exceeding five (5) pages in length, explaining how the proposed work will benefit the economic interest of the United States. This may be evidenced by (1) investments in the United States in research, engineering, and manufacturing (including, for example, manufacture of major components or subassemblies in the United States; (2) significant contributions to employment in the United States; and (3) agreements to promote the manufacture within the United States of products resulting from technology developed under the project. A description of the

quantitative benefits supported by a convincing rationale is preferable to a qualitative discussion. DOE expects that this information will be realistic and constitute a sincere commitment by the applicants to promote economic benefits for the United States.

#### 9. Exceptions and Deviations

- a. The applicant shall identify and explain any exceptions or deviations taken or conditional assumptions made with respect to the model Cooperative Agreement, the requirements of this section, and any other matters associated with this solicitation.
- b. Any exceptions taken must contain sufficient amplification and justification to permit evaluation. The benefit to the Government shall be explained for each exception taken. Such exceptions will not, of themselves, automatically cause an application to be termed unacceptable. A large number of exceptions, or one or more significant exceptions not providing benefit to the Government, however, may result in rejection of your application(s) as unacceptable.

### III. 2.2 Volume II--Technical Application (Maximum Page limit of 75 Pages)

#### A. General

An Application Cover sheet for Volume II shall be prepared that presents the solicitation number; applicant business name, address and point of contact; proposed Area of Interest; and provided with each copy of Volume II (See Exhibit 1, Application Cover Sheet).

The proposer shall include a technical discussion in the format specified below. This format relates to the technical evaluation criteria, Section IV.5. Proposers are asked to follow the outline shown on the following page. Alternate heading names and additional headings may be included as desired. The “Technical Volume” shall not exceed **75 pages (double- spaced, single-side) in length**. Pages in excess of the 75 page limit will not be evaluated.

#### B. Format and Content.

In order to produce a comprehensive Application for this solicitation, the applicant is required to address, at a minimum, the areas listed below. To help facilitate the review process and to ensure addressing all the review criteria, the applicant shall use the following Table of Contents when preparing the technical application.

## TABLE OF CONTENTS

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### TECHNICAL DISCUSSION

1. PROJECT BACKGROUND/DISCUSSION/UNDERSTANDING .....	#
2. MERITS OF PROPOSED ACTIVITY .....	#
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### APPENDICES

A. RESUMES .....	A1
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C. ADDITIONAL PERTINENT PUBLICATIONS (if any) .....	C1

**Public Abstract:** Provide a non-proprietary summary of the proposed project that (1) includes project benefits and (2) is suitable for public release. The Public Abstract shall not exceed 750 words.

In order that the Technical Application may be evaluated strictly on the merit of the material submitted, no cost information is to be included in the Technical Application. Where estimated man-hours will provide clarity, they shall be quoted in man-hour figures only, with no indication as to the cost of these man-hours.

#### Technical Discussion

This section shall contain the major portion of the Technical Proposal. It shall be presented in as much detail as practical and the applicant shall provide the technical information as follows:

#### **Project Background/Discussion/Understanding**

Applicants should consider and provide a comprehensive discussion that addresses the following factors:

- (1) a review of the developmental history or background of the proposed technology in relation to previous research to measure and remove mercury from flue gas;

- (2) complete and detailed project description and the perceived technical feasibility of the project (based on sound scientific and engineering principles);
- (3) the degree to which the proposed technology or methodology, if successfully developed as proposed, represents an important advancement towards achieving the objectives of the topic area;
- (4) extent to which the project verifies the use of sorbents/existing air-pollution control devices to provide mercury control.

### **Merits of Proposed Activity:**

#### Energy, Environmental, and Economic Benefits and Barriers

Applicants shall provide a discussion of the economic viability of the proposed mercury removal technique and potential benefits to the domestic power market. To the extent possible, this should include a discussion and description of the magnitude of the demonstrated economic benefits including co-pollutant control, the ability of the sorbent/technology to perform adequately in spite of potential variation in coal type, coal blends, burner design, plant size, and reduction in total mercury emissions. A discussion of the perceived benefits that the technology will provide to the industry and nation in the energy and environmental areas should be provided. The applicant shall also provide a comprehensive discussion of barriers that could impede the project success and plans to overcome them.

#### Sustainability and Replication

Applicants shall also provide evidence for potential replication and market penetration of the technique (addressing a variety of power plants firing different ranks of coal) within the utility industry. Provide the identification of, and commitment to, a viable mechanism, plan, or path to transfer of the technology to industry at the earliest practicable time if regulations are imposed.

### **TECHNICAL APPROACH/ WORK PLAN DEFINITION:**

The proposing applicant shall provide a comprehensive discussion that addresses the following factors:

- (1) a detailed project description including process diagrams, hardware sketches, etc;
- (2) technical performance of the proposed technology to achieve or surpass the solicitation's objectives with a complete description of tests and analysis needed to proceed along each step;
- (3) availability and performance of sorbent at scales commensurate with the desired testing objectives
- (4) detailed plan for the design, installation/modification, permitting, operation, and maintenance (if required) of the air pollution control device(s)
- (5) detailed plan for maintaining/disposing the system(s) following the end of the project.

Also, a Statement of Work (SOW) shall be provided that allows an evaluator to determine the quality, quantity, completeness, and realism of the work being proposed. The proposed SOW shall clearly describe and support in narrative form the work to be performed including 1\*) details regarding the type, size, and availability of equipment to be used, the quality of the expected data, the plan for evaluating the effectiveness of the proposed technology, process, or concept, the reality of the operating conditions, the number of variable and levels to be tested, the length of the test run period, and sampling and sample analysis schemes, 2) a detailed project and milestone schedules and a work breakdown structure (WBS), 3) a labor distribution plan, 4) a detailed description of how facilities, equipment, and support personnel or other resources will be applied to the proposed SOW, 5) reporting and technology transfer activities and 6) a rationale and logic diagram showing interrelationships between tasks and phases (if applicable).

\* Each proposer should prepare a separate quality assurance/quality control (QA/QC) plan for each test program proposed under each topic area of interest for the solicitation. The plan shall address how the Offeror would provide the assessment and the control of the data quality with respect to, but not be limited to, each phase of evaluating the proposed technology(ies), sample collection phase, analytical phase, data analysis phase, ongoing mercury removal performance and verification, assessing both the negative and positive impacts on the power plant APCDs while determining mercury material balances, etc., determining the sequestration potential of captured mercury in all media utilized for removal, and determining the step that would be taken for corrective action when pre-established specifications or conditions are not met.

DOE anticipates that there will be the need for significant interaction between the Contractor Principal Investigator (PI) and the DOE Contracting Officer's Representative (COR) during the testing and sampling periods. If mercury measurements become available on a real-time basis through the use of CEMs in the sampling periods, decisions can be made rapidly on modifications to the experimental plan and the determination of operating conditions for long-term operations. The statement of work should take into consideration the PI/COR interaction and suggest methods to keep the COR informed as to the progress of the project without the delays associated with formal reporting.

### **Applicant and Participant Roles, Capabilities and Organization, and Facilities:**

The proposing applicant shall describe its capabilities by including discussions that:

- (a) describe the credentials, capabilities, and experience (ie, prior research and development efforts toward control of pollutants in coal combustion flue gas, including that from coal-fired utilities) of key personnel by including, in an appendix, resumes and other information consistent with and appropriate to the role each will play in the proposed project, including major subcontractors;
- (b) document the relevant corporate experience (pollution control efforts relative to coal combustion flue gas, including that from coal-fired utilities) of participating organizations in past or current demonstration projects and the rationale for and corporate commitment to any teaming arrangement;
- (c) document the relevant experience in developing and executing quality assurance/quality control (QA/QC) plans and managing QA/QC teams for field testing of pollution control

technology for use in the coal-fired utility industry, and for sampling efforts of air toxic emissions (e.g., mercury), and/or criteria pollutants, and/or toxic release inventory (TRI) substances;

- (d) contain a project organization chart that delineates the responsibilities and lines of authority among the team organization [including subcontractor(s), vendor(s), host utility(ies), etc.] as well as the roles of key personnel and the percentage of time they will be dedicated to the project;
- (e) document that resources are/or facilities are available to accommodate the proposed project (corporate commitment).

## **SECTION IV**

### **EVALUATION FACTORS FOR SELECTION**

#### **IV.1 Introduction**

This section contains the evaluation approach as well as the individual criteria to be used in the evaluation of applications.

#### **IV.2 General**

It is the policy of DOE that any financial assistance be awarded through a merit-based selection process which means a thorough, consistent and independent examination of applications based on pre-established criteria by persons knowledgeable in the field of the proposed efforts.

#### **IV.3 Preliminary Evaluation**

Prior to a comprehensive evaluation, applications will undergo an initial review to determine whether the information required by the solicitation has been submitted and is properly completed. Applications will be reviewed for relevance to the “Mercury Control Program” and for responsiveness to the technical requirements of the solicitation. Volume I of the application will be reviewed to assess the Applicant’s eligibility under the lobbying, EPCRA and Simpson-Craig Amendment requirements. Applications that fail to propose the minimum cost share percent or fail to comply with any of the aforementioned requirements or any other mandatory requirement of the solicitation will be eliminated from consideration prior to the Comprehensive Evaluation. In the event that an application is eliminated, a notice will be sent to the applicant stating the reason(s) that the application will not be considered for negotiations leading to award under this solicitation.

#### **IV.4 Comprehensive Evaluation**

Applications passing the preliminary evaluation shall be subjected to a comprehensive evaluation in accordance with the evaluation criteria listed in this section.

The technical evaluation is conducted to determine the merits of the technical application with regard to the potential success of the project as well as future commercial applications. Comprehensive evaluation results in a numerical score for each application against each of the technical evaluation criteria.

The Environmental, Health, Safety, and Security (EHSS) Evaluation, which is not point scored, is conducted to determine the completeness of the Environmental Questionnaire, and to assess the applicant's awareness of EHSS requirements for mitigating project related EHSS risks and impacts.

The cost evaluation, which is not point scored, is conducted to determine the completeness of the cost estimate, appropriateness and reasonableness of the cost, and to assess the applicant's understanding of the Statement of Project Objectives.



## **IV.5 Technical Evaluation Criteria**

The Technical Evaluation is conducted to determine the merits of the technical application with regard to the potential success of the project. Comprehensive evaluation results in a numerical score for each application against each of the technical evaluation criteria. Technical applications submitted in response to this solicitation will be evaluated and scored in accordance with the criteria listed below:

### **Criterion 1: (20 Points) Project Background/Discussion/Understanding**

Clarity of the discussion and understanding of pertinent issues (technical, environmental, economic) related to the project.

### **Criterion 2: (30 Points) Merits of Proposed Activity**

Adequacy of the proposed approach for identifying potential energy, environmental, economic, and infrastructure benefits. Impacts of the project and the opportunities for project replication and sustainability. Project's ability to adapt and remove similar levels of mercury for different coal types, burner designs, and plant sizes.

### **Criterion 3: (30 Points) Technical Approach/Work Plan Definition**

Quality, appropriateness, and realism of proposed statement of work, work breakdown structure, milestone schedule, quality assurance/quality control plan, reporting and technology transfer activities, diagrams and detailed project description.

### **Criterion 4: (20 Points) Applicant and Participant Roles, Capabilities and Organization, and Facilities**

Adequacy of the team's ability to manage the project and the corporate commitment identified.

## **IV.6 Environmental, Health, Safety, and Security Criteria**

The Environmental Assessment Questionnaire will be evaluated in order to (1) determine adequacy and completeness of furnished data, and (2) assess the applicant's awareness of project-related requirements, including mitigating any project-related risks and impacts.

## **IV.7 Cost Information Evaluation Criteria**

The budget pages will not be point scored but will be evaluated in accordance with the following criteria:

- (1) Reasonableness and appropriateness of cost.
- (2) Required cost share and/or in-kind contributions.

**Selection of an application for award may involve a determination of cost effectiveness, e.g., whether an otherwise technically superior application is worth any additional associated cost. Applications that offer levels of cost sharing above the minimum may be considered by the Government to offer advantageous cost effectiveness.**

#### **IV.8 United States Economic Benefit Criterion**

Applicants' United States-benefits discussion will not be point scored but will be used by the Department to determine the relative economic benefit the United States can expect to derive from a proposed project.

#### **IV.9 Relative Ranking of Technical Criteria**

The evaluation of the technical application will be conducted using pre-established weights to determine the relative merits of an Offeror's application in accordance with the technical evaluation criteria. The technical evaluation (Volume II - Technical Application) represents 100% of the total evaluation scoring.

#### **IV.10 Program Policy Factor(s)**

Program policy factor(s) are those factors that are not indicative of the Offeror's individual merit, e.g., technical excellence, cost, proposer's ability, etc., but are relevant and essential to the process of choosing which application(s) that, individually or collectively, will best achieve the program goals. Such factors are often beyond the control of the Applicant. Applicants should recognize that some very good applications may not receive an award because they do not fit within a mix of projects which maximizes the probability of achieving the DOE's overall research and development objectives. Therefore, the following Program Policy Factors may be used by the Source Selection Official to assist in determining which of the ranked application(s) shall receive DOE funding support:

1. It may be desirable to select a project(s) for award that represents a diversity of technical philosophies and approaches. A balance of the technology portfolio for the program will be considered.
2. It is desirable to consider for selection that set of applications that will best accomplish DOE's programmatic objectives, taking into account current and planned relevant work sponsored both by DOE and by other institutions.
3. It may be desirable to select a project(s) for award of less technical merit than another project(s), if such a selection will optimize use of available

funds by allowing more projects to be supported while not being detrimental to the overall objectives of the program.

4. The desirability of selecting projects that collectively represents a diversity of geographic locations.
5. The desirability of selecting projects that collectively represent diverse types and sizes of proposing organizations.
6. Level of cost sharing above the minimum requirement, and type of cost sharing (e.g., cash is preferred to in-kind).

The above factors will be independently considered by the Source Selection Official in determining the optimum mix of applications that will be selected for support. These policy factors will provide the Source Selection Official with the capability of developing, from the competitive solicitation, a broad involvement of organizations and organizational ideas, which both enhance the overall technology research effort and upgrade the program content to meet the goals of the DOE.

#### **IV.11 Basis For Selection and Award**

The Department of Energy anticipates the award of one or more financial assistance instruments to those applicants whose applications are determined to be in the best interest of the Department in achieving the program objectives set forth in this solicitation. Selection of an application by the Department will be achieved through a process of evaluating the merits of the Offeror's complete applications, against the evaluation factors set forth in this section and by considering the Program Policy Factors. DOE reserves the right to select all or a portion of an application that meets these objectives.

This process reflects the Department's desire to accept an application based on its potential in best achieving program objectives, rather than solely on evaluated technical merit or cost. Accordingly, the Department of Energy may select for award all, none, or any part of an application, based on its decision as to which meritorious applications best achieve the program objectives set forth in this solicitation.

It is important for Offerors to note that selection for negotiations will be made entirely on the basis of the applications submitted. Applications should, therefore, address specifically the factors mentioned in the evaluation criteria, and not depend upon reviewers' background knowledge.

## **SECTION V - ELECTRONIC FORMS AND/OR DOCUMENTS**

- A. All forms needed for preparation of Volume I are found on the NETL website at: <http://www.netl.doe.gov/business/forms/forms.html> in either WordPerfect or Portable Document Format (PDF). Furthermore, a listing of the Volume I forms is presented in the table below. Please note that all forms were developed using WordPerfect 6.1 and formatted for printing using an HP LaserJet IIISi printer. No form is provided by DOE to the proposer to show willingness to cost share the required minimum. The proposer must provide a letter of commitment signed by a duly authorized corporate official committing the organization to the required cost sharing.
- B. To view and print PDF files from the NETL website, one needs to first download and install the free Adobe Acrobat Reader from Adobe Systems, Inc. See our getting started instructions for help. The WordPerfect 6.1 files have been put into self-extracting ZIP files. See our instructions on Unzipping a "Self-Extracting" file for further assistance. For assistance with any of the electronic forms or documents, please send an e-mail to the attention of the Contracting Officer at "[byrnes@netl.doe.gov](mailto:byrnes@netl.doe.gov)," or by telephone at (412) 386-4486 (Also reference trouble shooting page).

Note: Forms downloaded in WordPerfect are fillable; however, care should be taken to maintain the original format.

<b>Form #</b>	<b>Title</b>	<b>WP6.1 File</b>	<b>PDF File</b>
assure.fa	Financial Assistance Assurance Package	assurefa.exe	assurefa.pdf
D1600.5	*Assurance of Compliance	1600-5.exe	1600-5.pdf
D4600.4	Federal Assistance Budget Information	4600-4.exe	4600-4.pdf
D4620.1	Budget Page	4620-1.exe	4620-1.pdf
F4220.35	*Additional Representations & Certifications for Federal Financial Assistance	4220_35.exe	4220_35.pdf
F4220.38	*NETL Assurance, Non-Construction Programs	4220_38.exe	4220_38.pdf
nepasol	Environmental Questionnaire for Solicitations	nepasol.exe	nepasol.pdf
SF424	Application for Federal Assistance	424.exe	424.pdf
SF424b	Assurances - Non-Construction Programs	424b.exe	424b.pdf
SFLLL	*Disclosure of Lobbying Activities	lll.exe	lll.pdf
*Form also contained within form file: <a href="#">assure.fa</a> . Provided separately for convenience.			

## **SECTION VI - ATTACHMENTS**

### **ATTACHMENT A**

#### **MODEL COOPERATIVE AGREEMENT**

**NOTICE OF FINANCIAL ASSISTANCE AWARD**  
(See Instructions on Reverse)

Under the authority of Public Law \_\_\_\_\_  
and subject to legislation, regulations and policies applicable to (cite legislative program title): \_\_\_\_\_

1. PROJECT TITLE				2. INSTRUMENT TYPE  <input type="checkbox"/> GRANT <input type="checkbox"/> COOPERATIVE AGREEMENT			
3. RECIPIENT (Name, address, zip code, area code and telephone no.)				4. INSTRUMENT NO.		5. AMENDMENT NO.	
				6. BUDGET PERIOD  FROM:      THRU:		7. PROJECT PERIOD  FROM:      THRU:	
8. RECIPIENT PROJECT DIRECTOR (Name and telephone no.)				10. TYPE OF AWARD  <input type="checkbox"/> NEW <input type="checkbox"/> CONTINUATION <input type="checkbox"/> RENEWAL  <input type="checkbox"/> REVISION <input type="checkbox"/> SUPPLEMENT			
9. RECIPIENT BUSINESS OFFICER (Name and telephone no.)							
11. DOE PROJECT OFFICER (Name, address, zip code, telephone no.)				12. ADMINISTERED FOR DOE BY (Name, address, zip code, telephone no.)			
13. RECIPIENT TYPE  <input type="checkbox"/> STATE GOV'T <input type="checkbox"/> INDIAN TRIBAL GOV'T <input type="checkbox"/> HOSPITAL <input type="checkbox"/> FOR PROFIT ORGANIZATION <input type="checkbox"/> INDIVIDUAL <input type="checkbox"/> LOCAL GOV'T <input type="checkbox"/> INSTITUTION OF HIGHER EDUCATION <input type="checkbox"/> OTHER NONPROFIT ORGANIZATION <input type="checkbox"/> C <input type="checkbox"/> P <input type="checkbox"/> SP <input type="checkbox"/> OTHER (Specify) _____							
14. ACCOUNTING AND APPROPRIATIONS DATA:						15. EMPLOYER I.D. NUMBER	
a. Appropriation Symbol		b. B&R Number		c. NT/AFP/OC			
16. BUDGET AND FUNDING INFORMATION							
a. CURRENT BUDGET PERIOD INFORMATION				b. CUMULATIVE DOE OBLIGATIONS			
(1) DOE Funds Obligated This Action      \$ _____				(1) This Budget Period      \$ _____ [Total of lines a.(1) and a.(3)]			
(2) DOE Funds Authorized for Carry Over      \$ _____				(2) Prior Budget Periods      \$ _____			
(3) DOE Funds Previously Obligated in this Budget Period      \$ _____				(3) Project Period to Date      \$ _____ [Total of lines b.(1) and b.(2)]			
(4) DOE Share of Total Approved Budget      \$ _____							
(5) Recipient Share of Total Approval Budget      \$ _____							
(6) Total Approved Budget      \$ _____							
17. TOTAL ESTIMATED COST OF PROJECT      \$ _____ (This is the current estimated cost of the project. It is not a promise to award nor an authorization to expend funds in this amount.)							
18. AWARD AGREEMENT TERMS AND CONDITIONS This award/agreement consists of this form plus the following: a. Special terms and conditions. b. Applicable program regulations (specify) _____ (Date) _____. c. DOE Assistance Regulations, 10 CFR Part-600, as amended. d. Application/proposal dated _____, <input type="checkbox"/> as submitted <input type="checkbox"/> with changes as negotiated.							
19. REMARKS							
20. EVIDENCE OF RECIPIENT ACCEPTANCE				21. AWARDED BY			
_____ (Signature of Authorized Recipient Official)      (Date)				_____ (Signature)      (Date)			
_____ (Name)				_____ (Name)			
_____ (Title)				_____ Contracting Officer (Title)			

**INSTRUCTIONS**

*(This form shall be completed in accordance with the following instructions. For any clarification or additional information that might be needed, consult the appropriate section of the DOE Financial Assistance Procedures Manual (DOE-FAPM).)*

Insert in the space provided, in the line which begins, "Under the Authority of Public Law ...," the number and the name of the Public Law which authorizes this award. On the line below, enter the title of the pertinent program.

**Block 1** — Enter the project title as it appears in the SF-424 or equivalent application/proposal face sheet.

**Block 2** — Place a checkmark in the box beside the appropriate financial assistance instrument.

**Block 3** — Enter the name, address, and telephone number of the applicant/proposer as it appears in the SF-424 or equivalent application/proposal face sheet.

**Block 4** — Enter the instrument number. (See DOE-FAPM.)

**Block 5** — Enter the appropriate amendment number. (See DOE-FAPM for guidance.)

**Block 6** — Enter the starting date and expiration date for the current budget period. If a budget period is being changed, enter the starting date and expiration date for the budget period, as changed.

**Block 7** — Enter the starting date and anticipated completion date for the project. If a project period is being changed, enter the starting date and anticipated completion date for the project period, as changed.

**Block 8** — Enter the name and telephone number of the individual designated by the applicant/proposer as the director of the project.

**Block 9** — Enter the name and telephone number of the individual designated by the applicant/proposer as the contact for all business matters.

**Block 10** — Place a checkmark in the box opposite the term which identifies the type of action being taken. (The terms are defined in the DOE-FAPM.)

**Block 11** — Enter the name, address, and telephone of the individual designated by the DOE program office as the project officer.

**Block 12** — Enter the name, address, and telephone number of the individual/organization who will administer the agreement for DOE.

**Block 13** — Place a checkmark in the box beside the applicable recipient type. If the recipient is a for-profit organization, also check one of the lower boxes as follows: "C" for Corporation, "P" for Partnership, and "SP" for Sole Partnership. If the recipient is of a type not indicated, place a checkmark in the box beside "Other," and identify the recipient type in the space provided.

**Block 14** — Enter where indicated, the appropriation symbol, B&R number, Fund Type (NT)/AFP Code (AFP)/Objective Class (OC) and CFA Number from the Procurement/Financial Assistance Request Authorization (DOE Form PR-799A). Completion Block 14.d. is required only for awards made by Headquarters.

**Block 15** — Enter the applicant's/proposer's Federal Employer Identification No. from the SF-424 or equivalent application/proposal face sheet, or if the applicant/proposer is an individual, enter his/her social security number.

**Block 16** — Entries should be made as follows. (If no dollar entry is appropriate, a zero should be entered to indicate there was no error of omission.)

**Line a.(1)** — Enter the amount of DOE funds obligated by this action.

**Line a.(2)** — Enter the amount of DOE funds not expended in prior budget period(s), if any, authorized by DOE for expenditure in the current budget period.

**Line a.(3)** — Enter the amount of DOE funds previously obligated in the current budget period.

**Line a.(4)** — Enter DOE's share of the total approved budget shown in Line a.(6).

**Line a.(5)** — Enter the recipient's share of the total approved budget shown on Line a.(6).

**Line a.(6)** — Enter the total approved budget for the current budget period. (Add the amounts in Lines a.(4) and a.(5).)

**Line b.(1)** — Enter the amount of DOE funds obligated in the current budget period. (Add the amounts in Lines a.(1) and a.(3).)

**Line b.(2)** — Enter the amount obligated by DOE in prior budget periods.

**Line b.(3)** — Enter the amount obligated by DOE in the project period to date. (Add the amounts in Lines b.(1) and b.(2).)

**Block 17** — Must be completed for cooperative agreements. Contracting Officers may exercise discretion as to whether to complete it for grants. Enter the blank provided, the amount which represents the current estimate of total funds and dollar value of in-kind contributions (both DOE and recipient shares) needed to carry out the entire project. Include all funds and contributions previously provided, those being provided by this action, and all anticipated future obligations and contributions of both parties.

**Block 18** — Complete as follows.

**Item a.** — No entry necessary.

**Item b.** — Enter the legal citation from the Code of Federal Regulations or Federal Register and the effective date for the program regulations applicable to the program under which the award is made.

**Item c.** — Mark the box beside B for grants or C for cooperative agreements.

**Item d.** — In the blank provided, enter the date of the application/proposal. (If SF-424 is used, see block 23c on page 1.) Place a checkmark in the appropriate box to indicate whether the application/proposal was accepted as submitted or with negotiated changes.

**Block 19** — Enter any explanation or advisory comments which are required for, or applicable to, this action.

**Block 20** — Will be completed by the recipient.

**Block 21** — The Contracting Officer shall sign and date the top line. His/her name and title should be entered on the next two lines. This box must be signed prior to forwarding to recipient.

## **SECTION II -- SPECIAL TERMS AND CONDITIONS**

### **2.1 Prevailing Regulations**

As indicated on the face page, Block 18c, this award is subject to the DOE Assistance Regulations of Title 10, Code of Federal Regulations, Part 600. This set of regulations may be found in most major libraries or on the World Wide Web at:

**<http://www.pr.doe.gov/fahome.html>**

## **2.2 Order of Precedence**

In the event of any inconsistency among the provisions of this agreement, the inconsistency shall be resolved by giving precedence as follows: (a) Applicable Public Laws; (b) 10 CFR Part 600; (c) the special terms and conditions or schedule of articles; and (d) other documents, exhibits and attachments.

## **2.3 Substantial Involvement Between DOE and the Recipient**

### **a. Recipient Role**

The Recipient shall be responsible for all aspects of project performance as set forth in the Statement of Work. All services, personnel, facilities, equipment, materials, and supplies shall be furnished by the Recipient, unless otherwise specified under this Cooperative Agreement. The Recipient Project Director shall serve as its authorized representative for the technical elements of all work to be performed under this Cooperative Agreement. The Recipient Business Officer shall serve as its authorized representative for administrative elements dealing with the Cooperative Agreement.

### **b. DOE Role**

DOE shall monitor the Recipient's progress in performing the project and shall have a substantial role in project decision making.

The DOE Contracting Officer is the only Government Representative authorized to accept the reports and other deliverables the Recipient is required to provide under this Cooperative Agreement. The DOE Project Officer (same as Contracting Officer's Representative) shall have the authority to comment on those technical reports, plans, and other technical information the Recipient is required to submit to DOE for review and comment.

The DOE Project Officer shall have the authority to issue written technical advice that suggests redirecting the project work (e.g., by changing the emphasis among different tasks), or pursuing specific lines of inquiry likely to assist in accomplishing the Statement of Work. The DOE Project Officer is not authorized to issue, and the Recipient is not required to follow, any technical advice that constitutes work which is not within the scope of the Statement of Work; which in any



manner causes an increase or decrease in the total estimated cost or in the time required for performance of the project; which has the effect of changing any of the terms or conditions of the Cooperative Agreement; or which interferes with the Recipient's right to perform the project in accordance with the terms and conditions of this Cooperative Agreement.

c. **No Government Obligation to Third Parties**

In connection with the performance of the project, the Government shall have no obligation or responsibility to any contractor, subcontractor or other person who is not a party to this Cooperative Agreement. The foregoing limitation shall apply notwithstanding the Contracting Officer's prior approval of or consent to any contract awarded by the Recipient. The Recipient shall be responsible, without recourse to DOE, except for amounts DOE is otherwise obligated to pay pursuant to the provisions of this Cooperative Agreement for the resolution and satisfaction of all preaward protests, contract administration issues, and contract disputes arising out of contracts awarded by the Recipient for acquisitions related to the Project.

**2.4 Cost Sharing**

In accordance with 10 CFR 600.123(j), cost sharing is based on [Insert "a minimum amount for the Recipient" or "a percentage of total cost"].

**2.5 Funding**

Funding in the amount [ TBD ] is obligated and made available for payment of the Government's share of allowable costs. Additional budget period funding is anticipated from future DOE appropriations and intended for future obligation by amendment to this award.

The Recipient shall promptly notify the Contracting Officer in writing of the estimated amount of additional funds, if any, are required to continue timely performance under this award and when the funds will be required. The maximum DOE obligation to the Recipient is shown in Block 16(b) of the DOE Form 4600.1. The Government is not obligated to increase the total dollar amount funded and the Recipient is not obligated to continue performance under this award or otherwise incur costs to the extent that the Government's share of allowable costs would exceed the amount obligated by the Government.

**2.6 Allowable Preaward Costs**

The Recipient is entitled to reimbursement of preaward costs in the amount not to exceed [ TBD ] of DOE obligations. These costs are limited to work associated with performance of [ TBD ], incurred during the period starting on [ TBD ] through the effective start date of this award (Block 7, DOE F 4600.1).

## **2.7 Method of Payment**

The method of payment to the Recipient shall be accomplished by the method checked below:

- [ TBD ] Advance in accordance with 10 CFR 600.122(b)
- [ TBD ] Reimbursement in accordance with 10 CFR 600.122(e)
- [ TBD ] Other in accordance with 10 CFR 600.122

The Recipient shall request advances or reimbursements using the Standard Form SF 270, Request for Advance or Reimbursement, and shall complete Blocks 1-11 and 13.

Note 1: If the block designating payment by Advance is used, the Recipient is allowed advances not to exceed the funding required to cover expenditures for any succeeding one-month time period. Such requests for monthly advances shall be prepared using the Standard Form SF 270 in an original and two (2) copies.

The original is to be submitted to:

U. S. Department of Energy  
Oak Ridge Financial Services  
P. O. Box 4787  
Oak Ridge, TN 37831

The two copies are to be submitted to:

U.S. Department of Energy  
National Energy Technology Laboratory  
Commercial Payments Center  
P. O. Box 10940, MS 921-107  
Pittsburgh, PA 15236-0940

Note 2: If the block designating payment by Reimbursement is used, the Recipient shall submit the request for payment for costs incurred using the Standard Form SF 270 in an original and two (2) copies as indicated in Note 1 above. This request shall not be submitted more frequently than monthly.

## **2.8 Notice of Invoice Processing by Support Contractor**

A support service contractor performs the function of processing of all invoices submitted to the National Energy Technology Laboratory, against its awards. Therefore, this contractor has access to your business confidential cost/rate information. A special provision in this contractor's award requires the confidential treatment by all contractor employees of any and all business confidential information of other contractors and financial assistance recipients to which they have access.

## **2.9 Method of Payment - Payment Management System (PMS) 10 CFR 600.122**

The Recipient is required to maintain advances of Federal funds in interest-bearing accounts. Any interest income earned by the Recipient on Federal funds must be remitted at least quarterly to the cognizant DOE office. However, up to \$250 of the interest earned per year may be retained by the Recipient to cover administrative expenses.

Funds advanced to the Recipient must be kept to a minimum amount necessary to meet the Recipient's cash flow needs. Cash needs shall be determined by the Recipient's cash outlay requirements and shall not be based on costs incurred. If funds are erroneously drawn in excess of the Recipient's immediate disbursement needs, the excess funds should be promptly refunded and reissued when needed. The only exception to this is when excess funds will be disbursed by the Recipient within seven calendar days or when the excess funds are less than \$10,000 and will be disbursed within thirty (30) calendar days.

A computer-generated report (PMS 272 -- Federal Cash Transaction Report, Status of Federal Cash) will be furnished by the Department of Health and Human Services (DHHS) to all Recipients on a quarterly basis with active PMS accounts. The Recipient will be required to review the report and certify that the data are correct. In addition to returning the certified report to the DHHS, a copy of the report must be sent to the cognizant Contracting Officer. Unsigned reports will be returned and may cause delays in payment if the report due date has passed.

A detailed statement of costs incurred and the cost sharing amount shall be forwarded to the Contracting Officer concurrent with drawdowns from the PMS.

## **2.10 Acknowledgment of Federal Funding**

When issuing statements, press releases, requests for proposals, bid solicitations, and other documents describing this project, the Recipient shall clearly state (1) the percentage of the total cost of the project that will be financed with Federal money, and (2) the dollar amount of Federal funds for the project.

## **2.11 Real Property - None**

No real property may be acquired under this award.

## **2.12 Recipient-Acquired Property**

Reference Attachment [TBD ] for a listing of property authorized for acquisition under this award. Property acquired by the Recipient under this award shall be managed in accordance with

10 CFR 600.130 to 10 CFR 600.137, and reported as prescribed in Attachment B, Federal Assistance Reporting Checklist.

### **2.13 Federally Owned Property (Government-Furnished) - None**

No Government-furnished property is provided under this award.

### **2.14 Key Personnel**

Recipient personnel considered to be essential and key to the work being performed hereunder are specified below.

<u>NAME</u>	<u>TITLE</u>	<u>TELEPHONE</u>
[ TBD ]	[ TBD ]	[ TBD ]

The personnel specified in this clause are considered to be essential to the project. Before diverting any key personnel to work outside the scope of this award, the Recipient shall notify the Contracting Officer reasonably in advance and shall submit justification (including proposed substitutions) in sufficient detail to permit evaluation of the impact on the project. No key personnel may be substituted without the Contracting Officer's approval. Such approval shall be obtained in advance of the substitution, except that the Contracting Officer may ratify a substitution which, because of exigent circumstances, was made before the Recipient could request and/or obtain the Contracting Officer's approval.

### **2.15 Paper Work Reduction (NOV 1998)**

The award is subject to the requirements of the Paperwork Reduction Act of 1980 as implemented by the Office of Management and Budget rules, "Controlling Paperwork Burdens on the Public," published at 5 CFR 1320. These requirements apply if the Recipient will collect information from ten (10) or more respondents at the specific request of DOE, or if the award requires specific DOE approval of the information collection or the collection procedures.

The Recipient shall submit any proposed sponsored information collection to the person identified on the DOE F 4600.1 (Award Face Page, Block 12). The proposal shall be submitted at least 120 days prior to the intended date of information collection. DOE will seek the requisite approval from the Office of Management and Budget (OMB) and will promptly notify the Recipient of the disposition of the request.

### **2.16 Nondiscrimination (NOV 1998)**

This award is subject to the provisions of 10 CFR 1040, "Nondiscrimination in Federally Assisted Programs."

#### **2.17 Public Access to Information (JULY 1999)**

The Freedom of Information Act, as amended, and the DOE implementing regulations (10 CFR 1004) require DOE to release certain documents and records regarding awards to any person who provides a written request. The intended use of the information will not be a criterion for release. These requirements apply to information held by DOE and do not require Recipients, their subgrantees, or their contractors to permit public access to their records.

#### **2.18 National Security (NOV 1998)**

It is not expected that activities under the award will generate or otherwise involve classified information (i.e., Restricted Data, Formerly Restricted Data, National Security Information).

However, if in the opinion of the Recipient or DOE such involvement becomes expected prior to the closeout of the award, the Recipient or DOE shall notify the other in writing immediately. If the Recipient believes any information developed or acquired may be classifiable, the Recipient shall not provide the potentially classifiable information to anyone, including the DOE officials with whom the Recipient normally communicates, except the Director of Classification, and shall protect such information as if it were classified until notified by DOE that a determination has been made that it does not require such handling. Correspondence which includes the specific information in question shall be sent by registered mail to U.S. Department of Energy, Attn.: Executive Assistant for Defense Programs, DP-4, 4A-019/FORS, 1000 Independence Avenue, Washington, D.C. 20585. If the information is determined to be classified, the Recipient may wish to discontinue the project, in which case the Recipient and DOE shall terminate the award by mutual agreement. If the award is to be terminated, all materials deemed by DOE to be classified shall be forwarded to DOE, in a manner specified by DOE, for proper disposition. If the Recipient and DOE wish to continue the award, even though classified information is involved, the Recipient shall be required to obtain both personnel and facility security clearances through the Office of Safeguards and Security for Headquarters awarded awards obtained through DOE field organizations. Costs associated with handling and protecting any such classified information shall be negotiated at the time the determination to proceed is made.

#### **2.19 Notice Regarding the Purchase of American-Made Equipment and Products -- Sense of Congress (NOV 1998)**

It is the sense of the Congress, that to the greatest extent practicable, all equipment and products purchased with funds made available under this award should be American-made.

#### **2.20 Lobbying Restriction (Department of Interior and Related Agencies Appropriations Act, 1999)(JUNE 1999)**

The contractor or awardee agrees that none of the funds obligated on this award shall be made available for an activity or the publication or distribution of literature that in any way tends to

promote public support or opposition to any legislative proposal on which Congressional action is not complete. This restriction is in addition to those prescribed elsewhere in statute and regulation.

A copy of the DOE “Lobbying Brochure” which provides a summary of the statutory and regulatory restrictions regarding lobbying activities for Federal contractors can be found at (<http://www.pr.doe.gov/lobbying.html>).

## **2.21 Notice Regarding Unallowable Costs and Lobbying Activities**

Recipients of financial assistance are cautioned to carefully review the allowable cost and other provisions applicable to expenditures under their particular award instruments. If financial assistance funds are spent for purposes or in amounts inconsistent with the allowable cost or any other provisions governing expenditures in an award instrument, the government may pursue a number of remedies against the Recipient, including in appropriate circumstances, recovery of such funds, termination of the award, suspension or debarment of the Recipient from future awards, and criminal prosecution for false statements.

Particular care should be taken by the Recipient to comply with the provisions prohibiting the expenditure of funds for lobbying and related activities. Financial assistance awards may be used to describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not to encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

## **2.22 Year 2000 Compliance**

Year 2000 compliant means, with respect to information technology, the information technology accurately processes date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap-year calculations, to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date/time data with it.

The Recipient assures, by acceptance of this award, that items delivered under this contract are year 2000 compliant.

## **2.23 Reporting**

Failure to comply with the reporting requirements contained in this award will be considered a material noncompliance with the terms of the award. Noncompliance may result in a withholding of future payments, suspension or termination of the current award, and withholding of future awards. A willful failure to perform, or of unsatisfactory performance of this and/or other

financial assistance awards, may also result in a debarment action to preclude future awards by Federal agencies.

#### **2.24 Research Involving Recombinant DNA Molecules**

Any Recipient performing research involving recombinant DNA molecules and/or organisms and viruses containing recombinant DNA molecules agrees by acceptance of this award to comply with the National Institute of Health "Guidelines for Research Involving Recombinant DNA Molecules," (59 FR 34496, July 5, 1994 as amended by 59 FR 40170, 60 FR 20726, 61 FR 1482, 61 FR 10004, 62 FR 53335, 62 FR 56196, 62 FR 59032 and 63 FR 8052, "subject to change - call 301-496-9838 to obtain reference to a current version.")

#### **2.25 Safety & Health and Environmental Protection**

The Recipient shall implement the DOE work in accordance with all applicable Federal, State, and local laws, including codes, ordinances, and regulations, covering safety, health, and environmental protection.

The Recipient agrees to include this clause in first-tier subcontracts and agrees to enforce the terms of this clause.

#### **2.26 Permits and Licenses**

Within sixty (60) days of award, the Recipient shall submit to the DOE Contracting Officer's Representative (COR) a list of ES&H approvals that, in the Recipient's opinion, shall be required to complete the work under this award. The list shall include the topic of the approval being sought, the approving authority, and the expected submittal/approval schedule. The COR shall be notified as specific items are added or removed from the list and processed through their approval cycles.

The Recipient agrees to include this clause in first-tier subcontracts and agrees to enforce the terms of this clause.

## **SECTION III -- INTELLECTUAL PROPERTY PROVISIONS**

### **3.1 Intellectual Property Provisions**

The patent and technical data clauses included in this section apply to this award. As used in these applicable clauses, the term "Patent Counsel" refers to the following point of contact:

Intellectual Property Law Division  
U.S. Department of Energy  
Chicago Operations Office  
9800 South Cass Avenue  
Argonne, IL 60439

In any of the FAR and DEAR clauses contained in this section, use of the term "Contract" means "Award" and "Contractor" means "Recipient."

The Recipient shall include intellectual property clauses in any contract awarded in accordance with requirements of the clauses in this section and of 10 CFR Part 600.27.

### **3.2 Publication of Results/Acknowledgment Statement**

Publication of the results of the award is encouraged subject to any applicable restrictions in 10 CFR 600.27 (Patent and Data Provisions). Publications, as well as reports prepared under this award, shall contain the following acknowledgment statement:

"This (describe material) was prepared with the support of the U.S. Department of Energy, under Award No. DE-[ **TBD** ]. However, any opinions, findings, conclusions, or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the DOE."

### **3.3 Recipient Press Releases**

The DOE policy and procedure on planned press releases requires that all Recipient press releases be reviewed and approved by DOE prior to issuance. Therefore, the Recipient shall, at least ten (10) days prior to the planned issue date, submit a draft copy to the Contracting Officer of any planned press releases related to work performed under this award. The Contracting Officer will then obtain necessary reviews and clearances and provide the Recipient with the results of such reviews prior to the planned issue date.

### **3.4 Confidential Business Information**



Data represented to the Department as being confidential business information, and that does not include “Technical Data” as that term is defined in 52.227-14 Rights in Data General clause of this agreement, shall be submitted as an attachment to the required reports and will be withheld from disclosure outside DOE to the extent permitted by law, provided such attachment and each page therein is stamped with the following legend and no other:

**CONFIDENTIAL BUSINESS INFORMATION**

The Recipient considers the data furnished herein to contain confidential business information which is to be withheld from disclosure outside DOE to the extent permitted by law.

**3.5 Patent and Data Provisions**

The cooperative agreement will include the patent and data provisions in accordance with 10 C.F.R. 600.27.

**ATTACHMENT A, SECTION IV -- LIST OF ATTACHMENTS**

Attachment a -- Statement of Project Objectives

Attachment b -- Federal Assistance Reporting Checklist

Attachment c -- Budget Page(s)

Attachment d -- Recipient-Acquired Property

Attachment e -- Federally Owned Property -- Government Furnished

**ATTACHMENT a -- STATEMENT OF PROJECT OBJECTIVES (JAN 1999)**

[Insert the Statement of Project Objectives here. The format should be similar to the following.]

- A. Objectives
- B. Scope of Project
- C. Tasks to Be Performed
- D. Deliverables

The Recipient shall provide reports in accordance with the enclosed Federal Assistance Reporting Checklist and the instructions accompanying the Checklist. In addition to the reports identified on the Reporting Checklist, the Recipient shall provide the following:

[ TBD ]

**ATTACHMENT b -- FEDERAL ASSISTANCE REPORTING CHECKLIST (JAN 1999)**

NETL F 540.3-1#  
(8/99) OPI=PS10  
(Previous Editions Obsolete)

**U.S. DEPARTMENT OF ENERGY**  
**National Energy Technology Laboratory**

# **FEDERAL ASSISTANCE REPORTING CHECKLIST**

<b>1. Awardee:</b>	<b>2. Identification Number:</b>																																																																																																																
<b>3. Report Submission Address:</b> <i>The requested quantity of all required report deliverables shall be submitted to the following address:</i> <p style="text-align: center;"><b>NETL AAD DOCUMENT CONTROL BLDG. 921</b>  <b>U.S. DEPARTMENT OF ENERGY</b>  <b>NATIONAL ENERGY TECHNOLOGY LABORATORY</b>  <b>P.O. BOX 10940</b>  <b>PITTSBURGH, PA 15236-0940</b></p>																																																																																																																	
<b>4. Planning and Reporting Requirements:</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 15%;">Form No.</th> <th style="width: 10%;">Freq.</th> <th style="width: 25%;">Number of Copies</th> </tr> </thead> <tbody> <tr> <td colspan="4"><b>A. PROGRAM/PROJECT MANAGEMENT</b></td> </tr> <tr> <td><input type="checkbox"/> Federal Assistance Milestone Plan</td> <td>DOE F 4600.3</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Milestone Log</td> <td>DOE F 4600.3A</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Federal Assistance Management Summary Report</td> <td>DOE F 4600.5</td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Federal Assistance Program/Project Status Report</td> <td>DOE F 4600.6</td> <td>Q</td> <td>2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Financial Status Report</td> <td>SF-269 or SF-269A</td> <td>Q</td> <td>3</td> </tr> <tr> <td><input type="checkbox"/> Federal Cash Transaction Report</td> <td>SF-272</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>B. TECHNICAL (One paper copy and one PDF electronic file copy)</b></td> </tr> <tr> <td><input checked="" type="checkbox"/> Technical Progress Report</td> <td>None</td> <td>Q</td> <td>2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Topical Report</td> <td>None</td> <td>A</td> <td>2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Final Report</td> <td>None</td> <td>F</td> <td>2</td> </tr> <tr> <td colspan="4"><b>C. ENVIRONMENTAL</b></td> </tr> <tr> <td><input checked="" type="checkbox"/> Hazardous Substance Plan</td> <td>None</td> <td>O</td> <td>3</td> </tr> <tr> <td><input checked="" type="checkbox"/> Hazardous Waste Report</td> <td>None</td> <td>F</td> <td>3</td> </tr> <tr> <td><input type="checkbox"/> Environmental Compliance Plan</td> <td>None</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Environmental Monitoring Plan</td> <td>None</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Environmental Status Report</td> <td>None</td> <td></td> <td></td> </tr> <tr> <td colspan="4"><b>D. PROPERTY</b></td> </tr> <tr> <td><input type="checkbox"/> Annual Report of Property in the Custody of Contractors</td> <td>F 580.1-8</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> High Risk Property Report</td> <td>F 4440.5</td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Report of Termination or Completion Inventory</td> <td>SF-1428 or SF-120</td> <td>FC</td> <td>1</td> </tr> <tr> <td colspan="4"><b>E. EXCEPTION</b></td> </tr> <tr> <td><input type="checkbox"/> Conference Record</td> <td></td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Hot Line Report</td> <td>None</td> <td>A</td> <td>2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Journal Articles/Conference Papers and Proceedings</td> <td>None</td> <td>A</td> <td>2</td> </tr> <tr> <td><input type="checkbox"/> Software</td> <td>None</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Form No.	Freq.	Number of Copies	<b>A. PROGRAM/PROJECT MANAGEMENT</b>				<input type="checkbox"/> Federal Assistance Milestone Plan	DOE F 4600.3			<input type="checkbox"/> Milestone Log	DOE F 4600.3A			<input type="checkbox"/> Federal Assistance Management Summary Report	DOE F 4600.5			<input checked="" type="checkbox"/> Federal Assistance Program/Project Status Report	DOE F 4600.6	Q	2	<input checked="" type="checkbox"/> Financial Status Report	SF-269 or SF-269A	Q	3	<input type="checkbox"/> Federal Cash Transaction Report	SF-272			<b>B. TECHNICAL (One paper copy and one PDF electronic file copy)</b>				<input checked="" type="checkbox"/> Technical Progress Report	None	Q	2	<input checked="" type="checkbox"/> Topical Report	None	A	2	<input checked="" type="checkbox"/> Final Report	None	F	2	<b>C. ENVIRONMENTAL</b>				<input checked="" type="checkbox"/> Hazardous Substance Plan	None	O	3	<input checked="" type="checkbox"/> Hazardous Waste Report	None	F	3	<input type="checkbox"/> Environmental Compliance Plan	None			<input type="checkbox"/> Environmental Monitoring Plan	None			<input type="checkbox"/> Environmental Status Report	None			<b>D. PROPERTY</b>				<input type="checkbox"/> Annual Report of Property in the Custody of Contractors	F 580.1-8			<input type="checkbox"/> High Risk Property Report	F 4440.5			<input checked="" type="checkbox"/> Report of Termination or Completion Inventory	SF-1428 or SF-120	FC	1	<b>E. EXCEPTION</b>				<input type="checkbox"/> Conference Record				<input checked="" type="checkbox"/> Hot Line Report	None	A	2	<input checked="" type="checkbox"/> Journal Articles/Conference Papers and Proceedings	None	A	2	<input type="checkbox"/> Software	None			<input type="checkbox"/> Other _____			
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<b>5. Frequency Codes and Due Dates:</b> A - As required; for due date of Hot Line Report, Property Reports, and all other reports, see attached text. C - Federal Assistance change/revision, within 15 calendar days after event. F - Final; within ninety (90) calendar days after the project period ends. FC - Final (End of Effort - No Draft); end of effort. M - Monthly; within twenty-five (25) calendar days after end of the report period. O - Once after award; within thirty (30) calendar days after award. Q - Quarterly; within thirty (30) calendar days after end of the calendar quarter or portion thereof. S - Semiannually; within thirty (30) calendar days after end of program half-year. Y - Yearly; 90 calendar days after the end of calendar year.																																																																																																																	
<b>6. Special Instructions:</b> The forms identified in the checklist are available at <a href="http://www.netl.doe.gov/business/forms/forms.html">http://www.netl.doe.gov/business/forms/forms.html</a> . Alternate formats are acceptable provided the contents remain consistent with the form. All <b>technical reports</b> submitted to the DOE <b>must</b> be accompanied by a completed and signed <b>NETL F 2050.4</b> addressing patent information.																																																																																																																	

#### **4.1 General Instructions for the Preparation and Submission of Reports (MAY 1999)**

The Recipient shall prepare and submit (postage prepaid) the plans and reports indicated on the "Federal Assistance Reporting Checklist" to the addressee identified on the checklist. The level of detail the Recipient provides in the plans and reports shall be commensurate with the scope and complexity of the effort and shall be as delineated in the guidelines and instructions contained herein. The prime Recipient shall be responsible for acquiring data from any contractors or subrecipients to ensure that data submitted are compatible with the data elements which prime Recipients are required to submit to DOE.

#### **4.2 Financial Status Report (Standard Form 269 or 269A)(MAY 1999)**

This report is used for the Recipient to provide regular periodic accounting of project funds expended. The accounting may be on either a cash or accrual basis. Actual total expenditures and obligations incurred, but not paid, are reported for each reporting period for each major activity. They should correlate with those identified on the "Federal Assistance Milestone Plan" when the "Federal Assistance Milestone Plan" is required. Provision is made to identify the Federal and non-Federal share of project outlays for each identified activity.

#### **4.3 Report of Federal Cash Transactions (Standard Form 272)(MAY 1999)**

This report is used by DOE to monitor cash advanced to Recipients and to obtain disbursement information. The content of the report is prescribed in 10 CFR 600.152 for Institutions of higher Education, Hospitals, Other Non-Profit Organizations and Commercial Organizations or 10 CFR 600.241 for States and Local Governments.

#### **4.4 Technical Reports (MAY 1999)**

**CAUTION:** Technical reports SHALL NOT include limited rights data (such as restricted, proprietary or patentable information). If requested, Limited Rights Data shall be submitted in a separate proprietary appendix to the technical report. This appendix SHALL NOT be submitted in an electronic format but rather submitted in ONE ORIGINAL AND THREE (3) PAPER COPIES along with the paper version of the technical report deliverable. The appendix shall be referenced in, but not included in, the technical report deliverable under the contract. In accordance with FAR 52.227-14, Rights in Data-General, the appendix must be appropriately marked and identified.

All TECHNICAL REPORTS submitted to the DOE MUST be accompanied by a completed and signed NETL F 2050.4, addressing patent information.

#### **4.5 Technical Progress Report (Annual, Quarterly, and Semi-Annual)(MAY 1999)**

The body of the report should contain a full account of progress, problems encountered, plans for the next reporting period, and an assessment of the prospects for future progress.

The Technical Progress Report should include sufficient detail to allow the work to be reproduced by others. Results and reduced data shall be presented together with a discussion of the relevance of the findings. When experimental systems and/or procedures are being utilized for the first time, they shall be described in detail. This description shall contain detailed information on equipment and procedures utilized, as well as providing a rationale for their use. All data reduction and transformation methods shall be fully

documented. For every fourth calendar quarter for quarterly reports or every second half year for semi-annual reports, the report should be expanded to provide for detailed information on the results of the past year, problems encountered, significant accomplishments, listing of publications, presentations, and approaches to be taken the following year.

Informational items in technical progress reports shall include:

Experimental Apparatus -- A comprehensive description, including dimensioned drawings or sketches, of the apparatus and associated diagnostic measurement equipment employed to perform the experimental research.

Experimental and Operating Data -- All experimental data acquired during the course of research including detailed characterization of the sample materials subjected to experimentation.

Data Reduction -- A complete description of the methods employed to transform raw measured data into a form usable for interpretation along with any assumptions or restrictions inherent in the method and the resultant reduced data.

Hypothesis and Conclusions -- Logic for drawing conclusions or developing hypotheses shall be clearly stated along with applicable assumptions or restrictions.

#### **4.6 Final Technical Report (MAY 1999)**

The Final Technical Report shall document and summarize all work performed during the award period in a comprehensive manner. It shall also present findings and/or conclusions produced as a consequence of this work. This report shall not merely be a compilation of information contained in subsequent quarterly, or other technical reports, but shall present that information in an integrated fashion, and shall be augmented with findings and conclusions drawn from the research as a whole.

The Recipient shall deliver a draft copy of the final report thirty (30) days after completion of the project period. The Government shall be allowed thirty (30) days to review the draft copy and to notify the Recipient, in writing, of approval or recommended changes. If the Government does not approve or recommend changes within thirty (30) days of receipt of the draft copy, the report shall be deemed approved. The approved final report is due ninety (90) days after completion of the project period.

#### **4.7 Topical Report (MAY 1999)**

These reports usually provide a comprehensive statement of the technical results of the work performed for a specific task or subtask of the Statement of Project Objectives, or detail significant new scientific or technical advances. If required, DOE shall review and approve the report outline prior to submission of the report.

#### **4.8 Software (MAY 1999)**

Major pieces of computer software developed largely as a result of the performance of this effort shall be delivered to the Government shortly after development or at the completion of the effort, as appropriate. The software shall be delivered together with sufficient documentation concerning its development and use to permit future use by others, and to provide a firm basis for allowing modifications to be made in any subsequent development efforts. Unless otherwise specified, software shall be written in a standard computer

language such as Fortran 77, operate on the VAX VMS version 5.1 operating system or an IBM PC-compatible personal computer running MS/DOS, and should not incorporate or be dependent on the use of proprietary software.

#### **4.9 Guidelines for Organization of Technical Reports (MAY 1999)**

The following sections should be included (as appropriate) in technical reports in the sequence shown. Any section denoted by an asterisk is required in all technical reports.

**TITLE PAGE\*** - The Title Page of the report itself must contain the following information in the following sequence:

Report Title  
Type of Report (Quarterly, Semi-Annual, Annual, Topical, Final)  
Reporting Period Start Date  
Reporting Period End Date  
Principal Author(s)  
Date Report was Issued (Month [spelled out] and Year [4 digits])  
DOE Award Number (e.g., DE-FG26-99NT12345) and if appropriate, task number  
Name and Address of Submitting Organization (This section should also contain the name and address of significant subcontractors or subrecipients who participated in the production of the report.)

**DISCLAIMER\*** -- The Disclaimer must follow the title page, and must contain the following paragraph:

“This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.”

**ABSTRACT\*** - Should be a brief, concise summary of the report.

**TABLE OF CONTENTS\***

**LIST(S) OF GRAPHICAL MATERIALS**

**INTRODUCTION**

**EXECUTIVE SUMMARY** - This should be a well organized summary that highlights the important accomplishments of the research during the reporting period. It should be no less than one page and

no more than two pages in length, and should be single spaced. This summary must be more comprehensive than the traditional "abstract."

**EXPERIMENTAL\*** - This should describe, or reference all experimental methods being used for the research. It should also provide detail about materials and equipment being used. Standard methods can be referenced to the appropriate literature, where details can be obtained. Equipment should be described only if it is not standard, or if information is not available through the literature or other reference publications.

**RESULTS AND DISCUSSION\*** - It is extremely important that this section includes enough relevant data, especially statistical data, to allow the project manager to justify the conclusions. With the relevant data, explain how the data were interpreted and how they relate to the original purpose of the research. Be concise in the discussion on how this research effort solved or contributed to solving the original problem.

**CONCLUSION\*** - The conclusion should not simply reiterate what was already included in the "Results and Discussion" section. It should, however, summarize what has already been presented, and include any logical implications of how the successes are relevant to technology development in the future. This is extremely important, since "relevancy" continues to be a criterion of the program.

**REFERENCES\***

**BIBLIOGRAPHY**

**LIST OF ACRONYMS AND ABBREVIATIONS**

**APPENDICES (IF NECESSARY)**

Company Names and Logos -- Except as indicated above, company names, logos, or similar material should not be incorporated into reports.

Copyrighted Material -- Copyrighted material should not be submitted as part of a report unless written authorization to use such material is received from the copyright owner and is submitted to DOE with the report.

Measurement Units -- All reports to be delivered under this instrument shall use the SI Metric System of Units as the primary units of measure. When reporting units in all reports, primary SI units shall be followed by their U.S. Customary Equivalents in parentheses ( ).

The Recipient shall insert the text of this clause, including this paragraph, in all subcontracts under this award.

Note: SI is an abbreviation for "Le Systeme International d'Unites."

#### **4.10 Electronic Media Standard for Preparation of Technical Reports (MAY 1999)**

##### **FILE FORMAT**



Production of high-quality electronic documents is dependent on the quality of the input that is provided. Thus, the Recipient shall submit one good quality paper copy using either permanent or alkaline paper plus an electronic version of each technical report.

ELECTRONIC REPORTS SHALL BE SUBMITTED IN THE ADOBE ACROBAT PORTABLE DOCUMENT FORMAT (PDF). ELECTRONIC REPORTS SUBMITTED IN A FORMAT OTHER THAN ADOBE WILL BE RETURNED AND THE REPORT CONSIDERED DELINQUENT.

Each report shall be an integrated file that contains all text, tables, diagrams, photographs, schematics, graphs, and charts.

## SUBMISSION FORMAT

The electronic file(s) shall be submitted via diskette or CD-ROM. Diskettes or CD-ROMs must be labeled as follows:

DOE Award Number  
Type/Frequency of Report(s)  
Reporting Period (if applicable)  
Name of submitting organization  
Name, phone number and fax number of preparer

Diskettes -- Diskettes must be 3.5" double-sided, high-density (1.4 M Byte capacity). If file compression software is used to transmit a PDF file spanning more than one diskette, PKZIP from PKWare, Inc., is the required compression software. State the number of diskettes in the set (e.g., 1/3)

CD-ROM -- The electronic file(s) may be submitted on an ISO9660-format CD-ROM.

## FILE NAMING

In naming the electronic file, the Recipient shall use the standard eight-character naming convention for the main file name, and the three character extension applicable to the software use, e.g., .pdf for Adobe.

For the main file name, the first five characters are the last five digits from the award number; e.g., for Award Number DE-FG26-97NT12345, the first five characters are 12345.

The next character represents the technical report and will always be designated as "R."

The remaining two characters indicate the chronological number of the particular type of report; e.g., Quarterly Technical Progress Reports for a 5-year award are numbered R01 through R20. Thus, the main file name for the sixth Quarterly Technical Progress Report under Award No. DE-FG26-99NT12345 would be 12345R06.PDF. If monthly, quarterly, annual, and a final technical report are required, the numbers would run from R01 through R86 (60 monthly reports, 20 quarterly reports, 5 annual reports, and 1 final report).

#### **4.11 Environmental (MAY 1999)**

In response to the requirements of the National Environmental Policy Act of 1969 (NEPA) and other related environmental statutes, the National Energy Technology Laboratory (NETL) requires the submission of various documents that assess the environmental aspects and projected impacts of all of its proposed actions. These documents may include the following: (1) Hazardous Substance Plan, (2) Hazardous Waste Report, (3) Environmental Compliance Plan, (4) Environmental Monitoring Plan, and (5) Environmental Status Reports.

The environmental information provided in these documents will enable NETL to fulfill its responsibilities under NEPA (additional information about the requirements of the National Environmental Policy Act can be found in the DOE NEPA Compliance Guide and 40 CFR 1021) and to monitor the Recipient's compliance with other environmental regulations. The implementation of any task associated with a proposed action will be dependent upon DOE submitting and acquiring approval of necessary NEPA documentation. Therefore, to minimize the risk of project delays, it is imperative that these reports be submitted in a timely manner.

The information contained herein specifies the basic environmental requirements for this award, but it is not to be interpreted as containing all necessary information for any given project. Likewise, certain aspects of the requirements may not be applicable. Accordingly, the level of information provided should be sufficient for DOE to assess the environmental implications of the proposed action.

#### **4.12 Hazardous Substance Plan (MAY 1999)**

The Recipient shall submit a Hazardous Substance Plan not later than thirty (30) days after initial award. The Plan shall specifically identify each Hazardous Substance (as defined under 40 CFR 261, Subpart D, entitled Lists of Hazardous Wastes) anticipated to be purchased, utilized or generated in the performance of this award. For each such Hazardous Substance identified, the Plan shall specifically provide the following information:

- Description of Substance/Chemical
- EPA Hazardous Waste Number
- EPA Hazard Code
- Anticipated Quantity to be purchased, utilized or generated
- Anticipated Hazardous Waste Transporter
- Anticipated Hazardous Waste Disposal Facility Contractor and Location (City/Municipality,State)
- Anticipated Treatment Method

#### **4.13 Hazardous Waste Report (MAY 1999)**

The Recipient shall submit a Hazardous Waste Report at the completion of award performance. The Report shall specifically identify each Hazardous Waste (as defined under 40 CFR 261, Subpart D, entitled Lists of Hazardous Wastes) actually utilized, or generated in the performance of this award. For each such Hazardous Waste identified, the Report shall specifically provide the following information:

- Description of Substance/Chemical
- EPA Hazardous Waste Number
- EPA Hazard Code
- Actual Quantity Disposed

Actual Hazardous Waste Transporter  
Actual Hazardous Waste Disposal Facility Contractor and Location (City/Municipality, State)  
Actual Disposal Date  
Actual Treatment Method

The Hazardous Waste Report is intended as a final reconciliation of anticipated versus actual Hazardous Substances purchased, utilized, or generated in the performance of this award.

#### **4.14 Property Reports (MAY 1999)**

The NETL Property Handbook entitled "Management of Government Property in the Possession of Contractors," contains forms, instructions, and suggested formats for submission of property reports. This handbook can be found at <http://www.netl.doe.gov/business/index.html>.

#### **4.15 Annual Report of Property in the Custody of Contractors (NETL F 580.1-8) (MAY 1999)**

This report includes **ALL** government-owned and government-furnished property and materials for which the Recipient is accountable to the Government. This report shall also include Government Property at subcontractor's plants and alternate locations. This report is submitted on NETL F 580.1-8 for the period ending September 30 and is due by October 15.

#### **4.16 Report of Termination or Completion Inventory (SF-1428 AND SF-120) (MAY 1999)**

This report submitted on the SF-1428 and SF-120 is due immediately upon completion or termination of the award. The Recipient is required to perform and cause each subcontractor to perform a physical inventory, adequate for disposal purposes, of all Government property applicable to the award.

#### **4.17 High Risk Property Report (NETL 4440.5) (MAY 1999)**

Some property, because of its peculiar nature, its potential impact on public health and safety, on the environment, on security interests, or on proliferation concerns, must be handled, controlled, cleared and disposed of in other than the standard manner. High-risk property includes property which is: 1) nuclear-related; 2) proliferation-sensitive or export controlled; 3) chemically, biologically, or radiologically contaminated; 4) national security/military interests; and 5) hazardous materials and wastes. Further definitions of high-risk property can be found at <http://www.pr.doe.gov/ppl.html>. This report is required by the DOE for the control (acquisition, management and disposal) of high risk property to ensure that such disposition does not adversely affect public safety and/or the environment, national security, or nuclear nonproliferation objectives of the United States. This report shall be submitted for the period ending September 30 and is due by October 15 of each year.

#### **4.18 Hot Line Report (MAY 1999)**

The "Hot Line Report" may be used to report a major breakthrough in research, development, or design; an event causing a significant schedule slippage or cost growth; an environmental, safety and health violation; achievement of or failure to achieve an important technical objective; or any requirement for quickly documented direction or redirection. The report shall be submitted by the most rapid means available, usually

electronic, and should confirm telephone conversations with DOE representatives. Identification as a "Hot Line Report" serves notice at each link in the delivery chain that expedition in handling is required. Unless otherwise agreed by the parties involved, DOE is expected to take action and respond in a similarly timely manner. The report should include:

1. Recipient's name and address;
2. Award title and number;
3. Date;
4. Brief statement of problem or event;
5. Anticipated impacts; and
6. Corrective action taken or recommended.

Hot line reports shall document the incidents listed below:

1. Any single fatality or injuries requiring hospitalization of five or more individuals is to be immediately reported.
2. Any significant environmental permit violation is to be reported as soon as possible, but within 24 hours of the discovery of the incident.
3. Other incidents that have the potential for high visibility in the media are to be reported as quickly as possible, but within 24 hours following discovery.
4. Any failure resulting in damage to Government-owned equipment in excess of \$50,000 is to be reported as quickly as possible, but within 24 hours of the discovery of the failure.
5. Any unplanned event which is anticipated to cause a schedule slippage or cost increase significant to the project is to be reported within 24 hours.
6. Any verbal or written Notice of Violation of any Environmental, Safety, and Health statutes arising from the performance of this award is to be immediately reported.
7. Any accidental spill or release which is in violation of any Environmental, Safety, and Health statutes arising from the performance of this award is to be immediately reported, but within 24 hours of the discovery of the accident.
8. Any incident which causes a significant process or hazard control system failure, or is indicative of one which may lead to any of the above defined incidents, is to be reported as soon as possible, but within 5 days of discovery.

The requirement to submit Hot Line Reports for the incidents identified in 1, 2, 3, 6, or 7 is for the sole purpose of enabling DOE officials to respond to questions relating to such events from the media and other public.

When an incident is reported in accordance with 4, 5, 6, 7, or 8, the Recipient shall conduct an investigation of its cause and make an assessment of the adequacy of resultant action. A written report is required no later than ten (10) calendar days following the incident and shall include an analysis of the pertinent facts regarding the cause, and a schedule of the remedial events and time periods necessary to correct the action.

When an event results in the need to issue a written or verbal statement to the local media, the statement is to be cleared first, if possible, and coordinated with NETL Management and Communications Division, the Contracting Officer's Representative (COR) and the Contracting Officer.

**Attachment C -- Budget Pages (APR 1999)**

[Insert the files from K:\common\addata\afom\d4620.1 (Budget Page) and/or K:\common\addata\afom\er\_f4600.4 (Grant Application Project Period Summary) if it is anticipated that the award is to be made to educational or nonprofit organizations.

[Insert the either the DOE Form 424a or the DOE 4600.4 if it is anticipated that an award will be made to commercial organizations.]

**Attachment D -- Recipient-Acquired Property (JAN 1999)**

[Contract Specialist shall identify exempt property and/or equipment under this attachment]

**EXEMPT**

[Insert exempt property which has an acquisition cost less than \$5,000. DO NOT include expendable property (i.e., paper, pens, pencils, gases, chemicals, etc.)]

**EQUIPMENT**

[Insert equipment with an acquisition cost greater than \$5,000]

**Attachment E -- Federally Owned Property -- Government Furnished (JAN 1999)**



EXHIBIT 1  
APPLICATION COVER SHEET (Page 1 of 2)

(Check one)

☐ Volume I - Business and Financial Application

☐ Volume II - Technical Application

SOLICITATION FOR MULTIPLE FINANCIAL ASSISTANCE AWARDS  
UNDER COOPERATIVE AGREEMENTS

FOR

TESTING AND EVALUATION OF PROMISING MERCURY CONTROL TECHNOLOGIES FOR  
COAL-BASED POWER SYSTEMS

SOLICITATION NUMBER - DE-PS26-00NT40769

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Name of Organization

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Address of Organization, including the County and Congressional District

Title of Proposed Project

Proposed Duration: \_\_\_\_\_(mos.) Requested Starting Date: \_\_\_\_\_

Name of Project Manager: \_\_\_\_\_

Position and Title: \_\_\_\_\_

Telephone and FAX (with area code): \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Department Affiliation: \_\_\_\_\_

EXHIBIT 1- APPLICATION COVER SHEET

Page 2 of 2

**Recommended Topic Area of Interest for Review:**

☐ **TOPIC 1: FIELD TESTING OF SORBENTS UPSTREAM OF EXISTING UTILITY PARTICULATE CONTROL DEVICES**

☐ **SUBTOPIC 1.1: Total Mercury Removal Associated with Electrostatic Precipitators (ESPs)**

☐ **SUBTOPIC 1.2: Total Mercury Removal Associated with Fabric Filters (FFs)**

☐ **SUBTOPIC 1.3: Total Mercury Removal Associated with an ESP Polishing Device**

☐ **SUBTOPIC 1.4: Total Mercury Removal Associated with a Device Enhancing Existing Air Pollution Control Device Performance**

☐ **TOPIC 2: FIELD TESTING OF EFFECTIVE MERCURY CONTROL TECHNOLOGIES UPSTREAM OF AND ACROSS FLUE GAS DESULFURIZATION SYSTEMS**

☐ **TOPIC 3: INTEGRATED APPROACH FOR OVERALL CONTROL OF MERCURY**

☐ **TOPIC 4: TESTING NOVEL AND LESS MATURE CONTROL TECHNOLOGIES ON ACTUAL FLUE GAS AT THE PILOT-SCALE**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_ (Authorized Official)